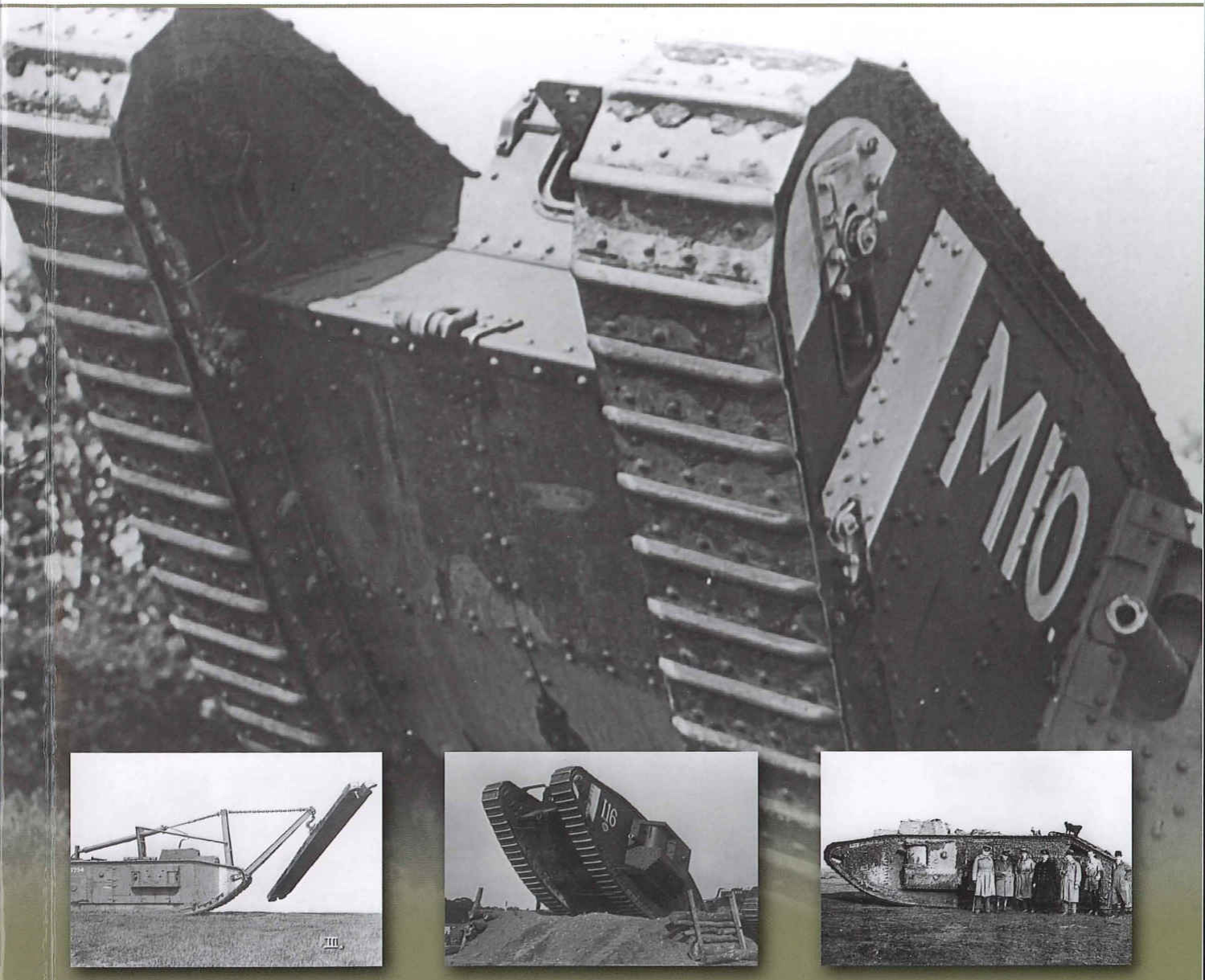
MARK V TANK



DAVID FLETCHER

ILLUSTRATED BY HENRY MORSHEAD

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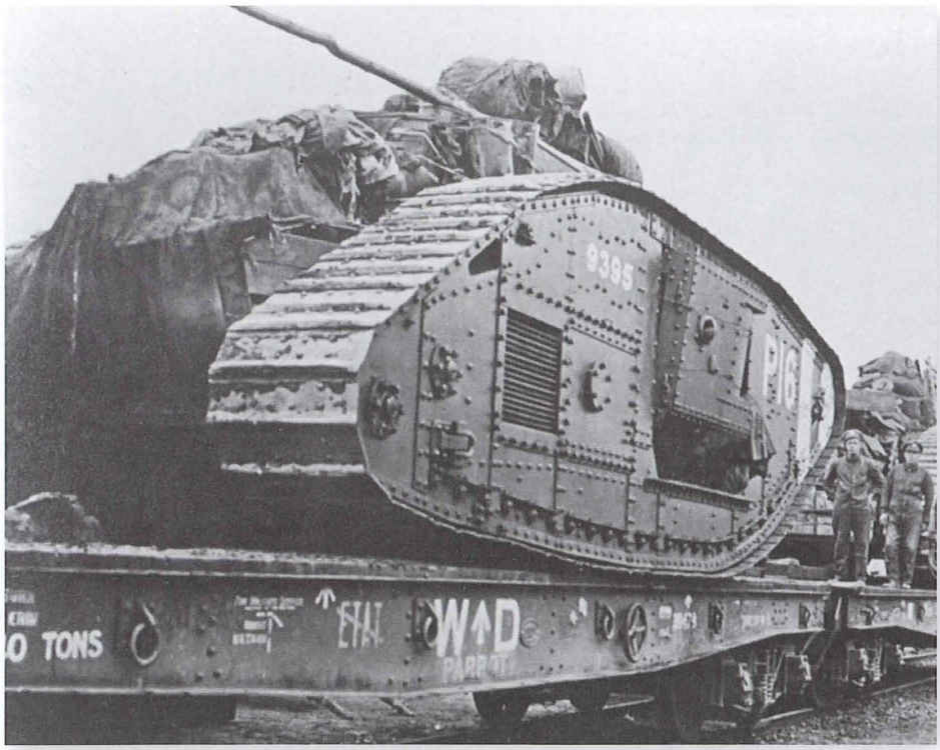
NEW VANGUARD • 178

MARK V TANK



DAVID FLETCHER ILLUSTRATED BY HENRY MORSHEAD

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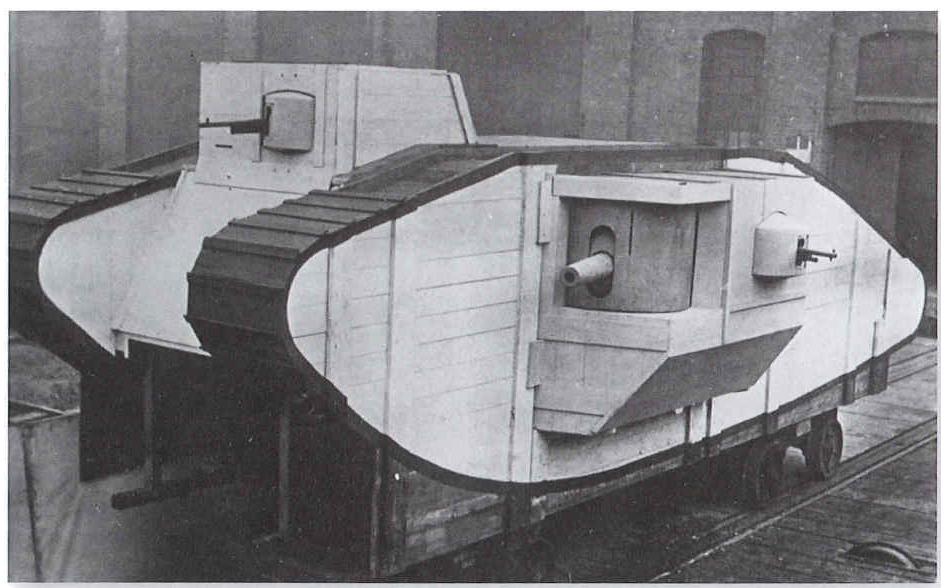
MARK V TANK

INTRODUCTION

Most writers and historians commenting on the introduction of the Mark V tank in 1918 suggest that this was an entirely new design that gave the British Tank Corps a considerable edge in the final year of World War I. This is quite true; it was new and it did make a tremendous difference to what the Tank Corps was able to achieve in 1918.

On the other hand, since there never is anything entirely new, the Mark V can also be seen as part of an evolutionary process and, as we hope to show here, many of its most significant features were originally developed for its predecessor, the Mark IV (New Vanguard No. 133). Indeed one is tempted to suggest that many people, even those with a serious interest in World War I tanks, would find it difficult to distinguish a Mark IV from a Mark V, at least when viewed from the outside. Inside it was quite different.

It began with the engine; the 105hp Daimler used in tanks Marks I–IV was clearly under-powered but an attempt to uprate it to 125hp was disappointing, and commitments to the Aircraft Production Department prevented the Daimler Company from developing anything more powerful. There was no other suitable engine available and few opportunities to develop one since the aircraft industry already had a firm grip on the majority of eligible firms.



A full-size wooden mock-up of the original Mark V proposal was trundled out from Metropolitan's Saltley works in Birmingham on 23 June 1917. It was an entirely new design with a reshaped hull, which is probably why it was never adopted.

Precisely what happened next is open to various interpretations but on balance it seems that the project began in October 1916 when an ingenious young engineer, Harry Ricardo, was tasked with developing a new engine. His brief was daunting: Ricardo was not permitted to use significant materials such as aluminium, and the engine was required to develop more power yet fit into the same chassis space as the Daimler and should not exhaust great clouds of smoke that revealed the location of a tank on the battlefield.

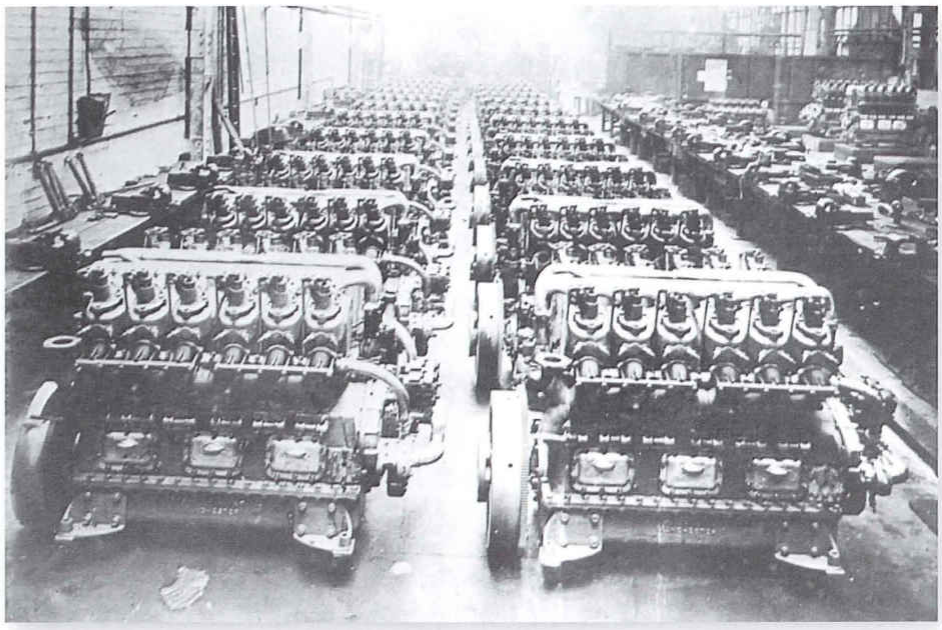
As if this were not enough Ricardo was expected to find firms capable of building hundreds of these engines quickly. According to Ricardo himself the order to begin this work came from Eustace Tennyson d'Eyncourt in his role as Chief Technical Advisor to the Department of Mechanical Warfare Supply under Albert Stern.

Stern, characteristically, claims Ricardo as his own and implies that he discovered him – apparently dating this to January 1917. In fact Ricardo was drawn into the tank programme at quite an early stage, when William Tritton of Fosters asked him to come up with a means of centring tanks on railway wagons, a requirement that soon vanished as tank drivers improved their skills. It is also worth pointing out that Ricardo already had a fine reputation as an innovative engineer and had friends in the tank world dating back to his university days. It was this reputation, these contacts and the fact that he was already on hand that seemed to have worked in his favour.

Much of the initial work was done inside Ricardo's head and it is clear that he had been thinking about the problem from an early stage. Meanwhile he discovered a group of industrial gas-engine manufacturers, mostly in the Manchester area, who were prepared to build to his design. There were seven in all under the parentage of Mirlees, Bickerton & Day, but Ricardo was closest to the firm Peter Brotherhood of Peterborough, with whom he had worked on some earlier projects. They hurried through the construction of a prototype to Ricardo's design, which was ready for testing by March 1917 and this enabled him to gain a head start over the tank production people.

The Ricardo engine, as it became known, was a straight six of 19-litre capacity. Unable to increase the length and width of the engine Ricardo took the only other option and made it taller; he employed a crosshead valve system, similar to that used on a steam engine and prevented surplus oil from reaching

What would appear to be a very early example of a Mark V is seen here with its nose stuck in a deep puddle. The words 'SOFT PLATE' on the side, and the absence of guns, suggests a prototype. Overlooking it is another Mark V, with grousers fitted to the tracks and the six-pounder gun – in what appears to be a Mark IV sponson – retracted.



Ricardo 150hp engines at the Crossley Brothers works in Manchester. This is a remarkable output for a relatively small firm and production could be sustained only by spreading the work over as many producers as possible.

the crowns of the pistons, which would result in smoke from burned oil. He avoided the use of high-tensile steel and aluminium and even incorporated large removable panels in the crankcase so that a good deal of maintenance could be done with the engine in situ.

Ricardo was happy that the new engine could be made to deliver 200hp but was told by W. G. Wilson, one of the original tank designers, that this would place too much strain on the transmission and instead reduced it to 150hp. Whether Wilson was referring to the original drive train of the Mark IV or his own epicyclic design is not clear.

THE FIRST MARK V

A party from the United Kingdom visited Central Workshops in France on 17 April 1917, during a lapse in the Arras battles. Their object was to show the senior staff in France the General Arrangement drawings of a new tank, to be known as the Mark V. It is worth remarking that at this time the first example of a Mark IV tank had yet to arrive in France. Colonel Frank Searle, the officer commanding Central Workshops, soon learned that this was not a matter open for discussion – what they were shown was to be the Mark V tank and 'no alternative would be entertained' – or maybe not. The overall design is credited to Wilson.

Finalized drawings were dated 9 June 1917 and at the end of the month, on 23 June, a full-size wooden mock-up was rolled out from the Metropolitan Railway Carriage & Wagon Company plant in Saltley, Birmingham, so we have a good idea of what it would have looked like. Since it was never built and we have this view of the mock-up there is no need to provide a lengthy description but it is worth pointing out the longer hull, enlarged male sponson with improved machine-gun mounting, the apparently taller driving cab and rear cab with machine-gun position. It would have been powered by the new Ricardo engine, linked to Wilson's transmission and have wider, 24-inch tracks. Two other points are worth making. First the machine guns appear to be of the Hotchkiss pattern, at a time when the Lewis gun was still very much in favour. Second there is clearly no provision for an unditching beam, a device

that had not been developed when the first drawing of this tank was prepared. At the same time Metropolitan showed off a wooden mock-up of an even more revolutionary tank that was given the designation Mark VI, which also failed to enter production.

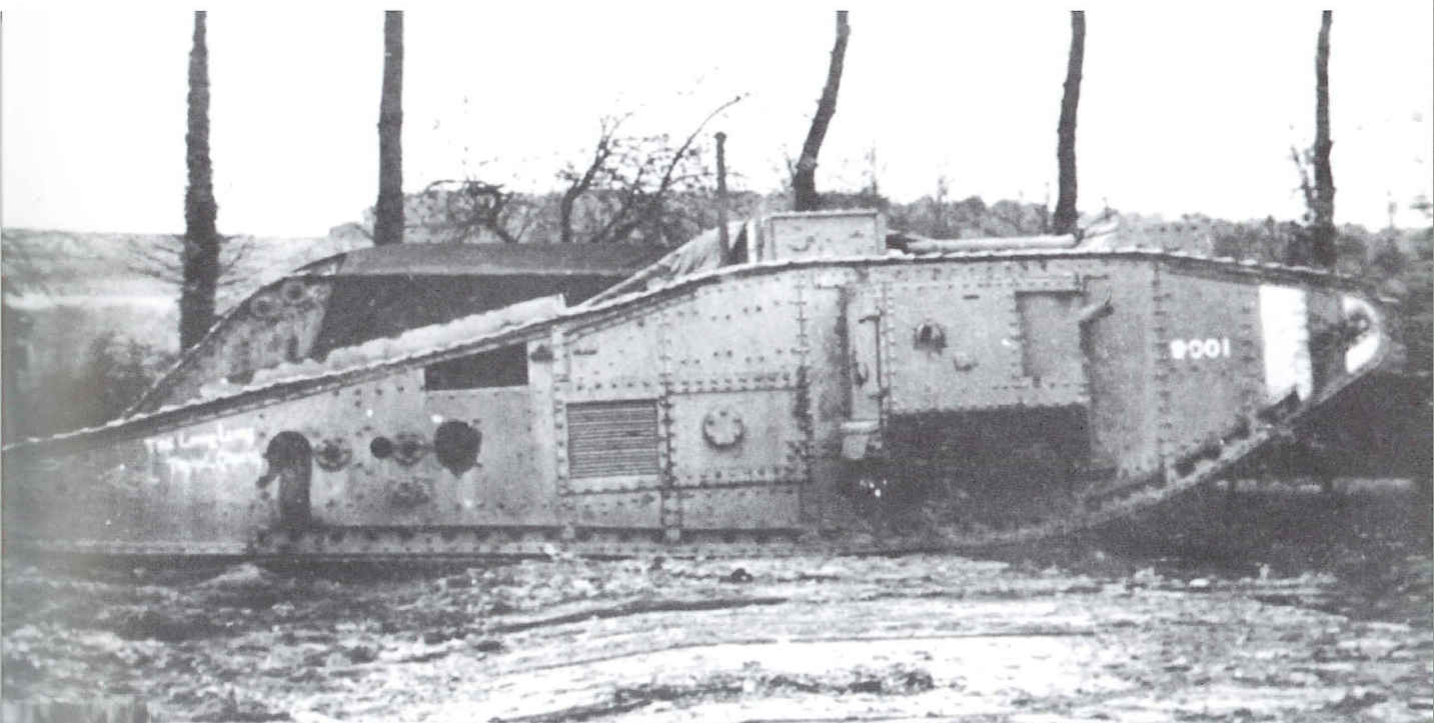
It is pointless attempting to evaluate this Mark V design; all one can say for sure is that the reason it was not built was as a direct result of the large-scale orders for the Mark IV machine that had already been placed. Indeed nothing reveals the differences between the military user and civilian manufacturers more than the fate of this tank.

THE REAL MARK V

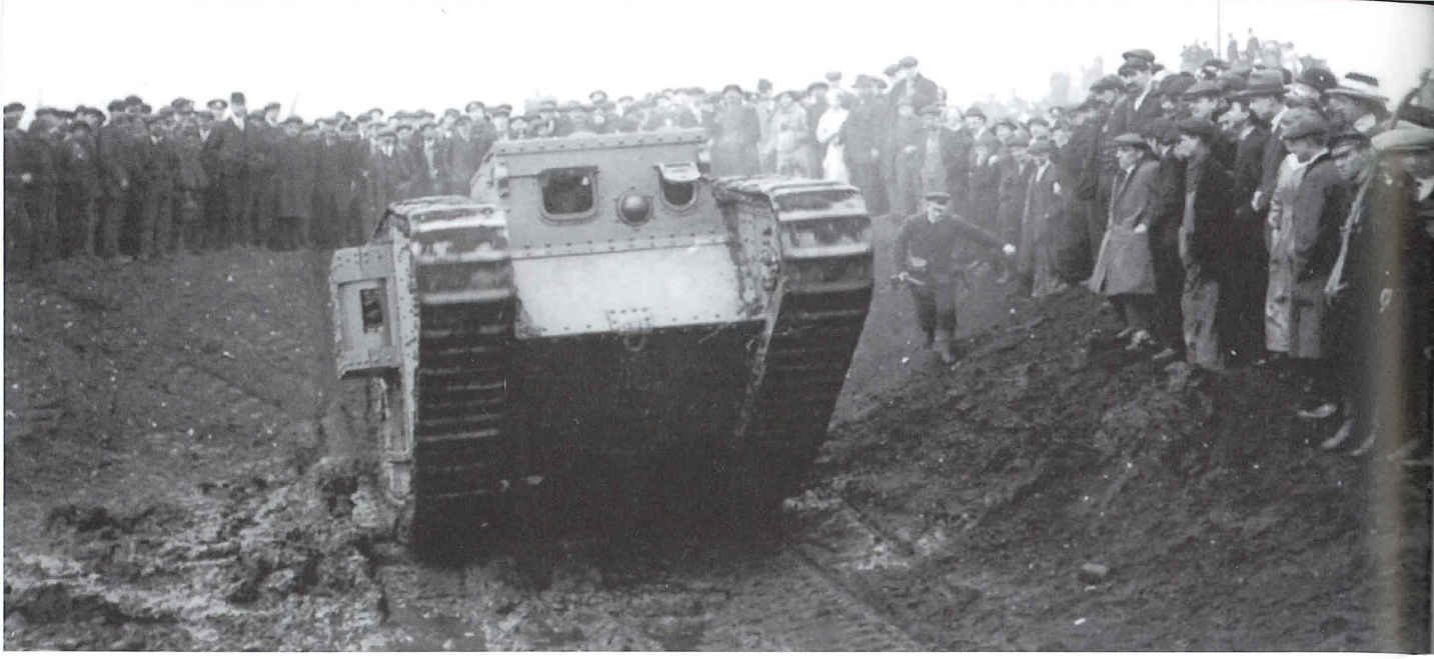
Quantity & Type	Hull numbers
200 male tanks	9001–9200
200 female tanks	9251–9450

The war made unheard-of demands of British industry, not just on obvious things such as guns, ammunition, aircraft and warships but on military transport, merchant ships and the British railway system, which was showing signs of collapse under the strain. Tanks were latecomers that increased the pressure on industry and they were not even the top priority, not by a long way.

When Albert Stern placed huge orders for the Mark IV tank towards the end of 1916 he was undoubtedly fulfilling Haig's demand for 1,000 more tanks and ensuring that the British tank force would have enough machines to see it through the difficult year ahead, but he was also clogging up the production lines with a type that many agreed was already out of date. This is why Ricardo was instructed to make sure that his new engine would occupy the same space as the Daimler and why Wilson's steering system was likewise evolved to fit existing tanks. The plan was to fit these items into late production Mark IV hulls, producing what was to be known as the Mark IVA for 1918. In the event the modifications required to adapt the Mark IV in this



The original Mark V male tank 9001, probably photographed in France and fitted with a Tadpole Tail extension. Behind it is what appears to be a Mark IX Supply Tank, one of which also went to France.



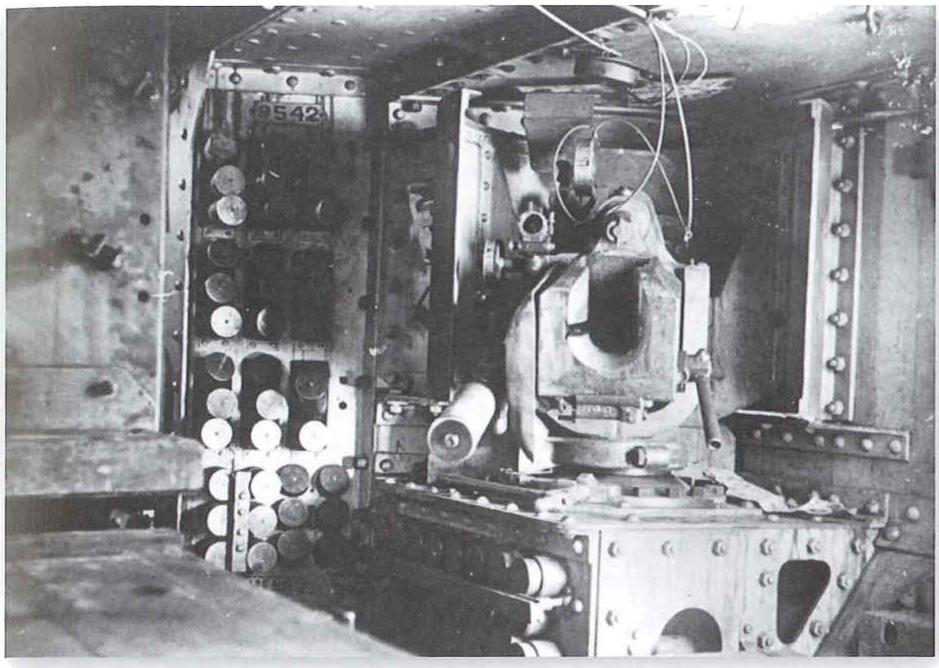
This unusual photograph shows a very bare Mark V female giving a demonstration at Fosters of Lincoln. Odd, because Fosters never built the Mark V. Even so it seems to interest the crowds.

This picture, also taken at Fosters, reveals that His Majesty King George V was there and demonstrates how to dismount, fairly elegantly, from a female machine. It also serves to show some of the key features of a Mark V female tank; the air intake louvre on the right, the rear cab and the doors beneath the female sponson.

way proved to be more trouble than they were worth, and apart from a few experimental prototypes production switched, late in 1917, to a new model built from the tracks up yet recognizably a close relation to the Mark IV and earlier models. The first complete machine rolled out of the Birmingham factory in December 1917. Quite which factory, however, is not clear.

The sole contractor for Mark V tanks was the Metropolitan Carriage, Wagon and Finance Company, representing a group of companies, railway rolling stock manufacturers, amalgamated in 1902 by the mercurial industrialist Dudley Docker. Two of its factories, the original Metropolitan Company works at Saltley and that of the Oldbury Railway Wagon and Carriage Co. Ltd, at Oldbury of course, had been turned over to tank production in 1916. There is no proof, but evidence suggests that Mark V production was focused entirely upon the Saltley plant, because Oldbury was still building Mark IVs. In any case the testing ground for tanks built at both works was adjacent to the Oldbury site so it is entirely possible that Mark V tanks were also built there.

Since, once again, we are examining a machine that has a lot in common with its predecessors the best course seems to be to look at those features that are different and in particular features that serve to identify a Mark V from a Mark IV. Starting at the front the Mark V and its derivatives can easily be identified by the size of the two hinged visors on the vertical front face of the cab. The one on the right, as you look at it, is narrower than the one on the left, reflecting the fact that the driver, behind the wider visor, now had total control over the tank. It should also be noted that the narrow vision slits that hitherto helped to identify the various types were now eliminated from the front plate, and a large hatch located on top of the cab, something foreshadowed in late production Mark IV tanks, was now standard.

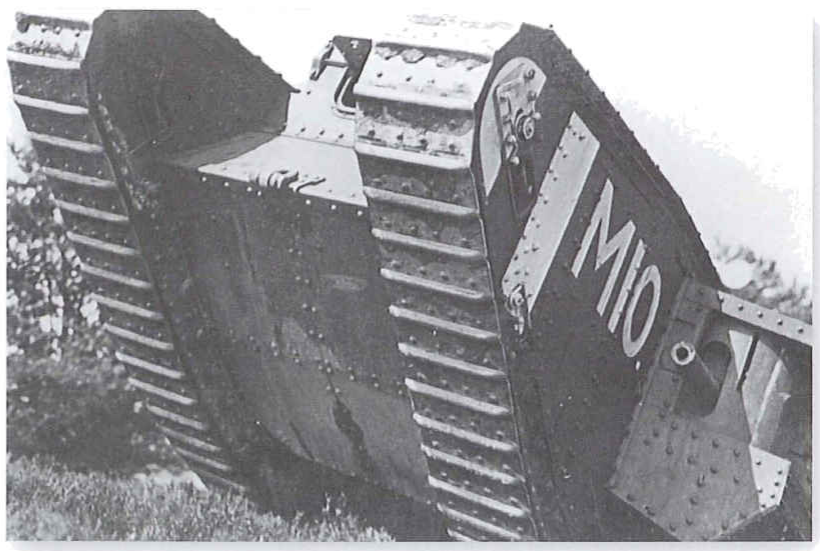


Here we have an interior view of a male sponson, although 9542 was in fact a Mark V*. Notice how ammunition is stowed in the pedestal beneath the gun, the lower part of the track frame and that someone has forced 57mm rounds into the machine-gun ammunition slots directly above. The cables presumably link to range and direction indicators operated from the commander's cab.

To the casual viewer the sponsons are identical on Marks IV and V; they were certainly interchangeable but there are differences. On female machines these are limited to a loophole in the upper surface, suitable for firing a pistol through, or maybe showing a flag, and on the new tanks, which would carry the slimmer Hotchkiss machine guns, there are slight differences in the shape of the rotary shield.

In the case of male tanks the significant difference is internal, although there is evidence of this on the outside. In a sense it is a reversion to the arrangement in the Mark I tank in that the pedestal that supported the gun was bolted to the top of an ammunition locker that held 16 rounds. This change can be identified from the outside by a vertical line of three rivets, bisecting the lower front plate of the sponson. Once again there is a protected loophole in the top plate but otherwise the sponsons are essentially identical. It is in the area behind the sponson that the greatest changes may be noted. On each side of the hull one may easily see the square louvred panels that are the air inlet (left) and outlet (right) through which cooling air for the radiator passes, and on top the full-width box-shaped rear cab, another very distinct feature of this type. The radiator itself was a tall slim thing located on the right side, up against the hull with a tubular reserve tank in front. The louvres on each side are linked by metal ducting running across the rear, which contains the radiator cooling fan.

The rear cab is probably the most distinctive feature of the Mark V although there is some evidence that the design was first



This dramatic picture of a Mark V of B Company, 13th Battalion, provides a clear view of the rivet pattern on the male sponson. The photograph was taken at Kalterherberg, Germany, in July 1919.

tried out experimentally on one or more Mark IV machines. Now that he was relieved of any responsibility for actually driving the tank the commander was not obliged to occupy the seat next to the driver, so he could move back to this position where he might get a better view of the area all around. From here he also had control of a simple semaphore device, operated by chains, by means of which basic signals might be sent from tank to tank, and also cable-operated devices, leading to pointers in the sponsons of male tanks by means of which the direction and range of suitable targets might be indicated. How well either of these things worked, or how often they were actually used, is not clear.

This rear cab, however, had another purpose. The sides, which were hinged at the top, could be swung open in order that crew members might attach the unditching beam to the tracks without actually having to climb outside their tank. Sometime early in 1918 an officer believed to be Major Philip Johnson, from Central Workshops in France, made a tour of various tank facilities in Britain. In Birmingham he found Major Harry Buddicom working on a number of projects, including unditching beams, and he credits Buddicom with the design of the rear cab and a sprung-catch device that was supposed to hold the beam in place when it was not required. The rear cab caused the rails supporting the beam to be raised and the unditching beam itself was invariably carried just ahead of the rear cab.

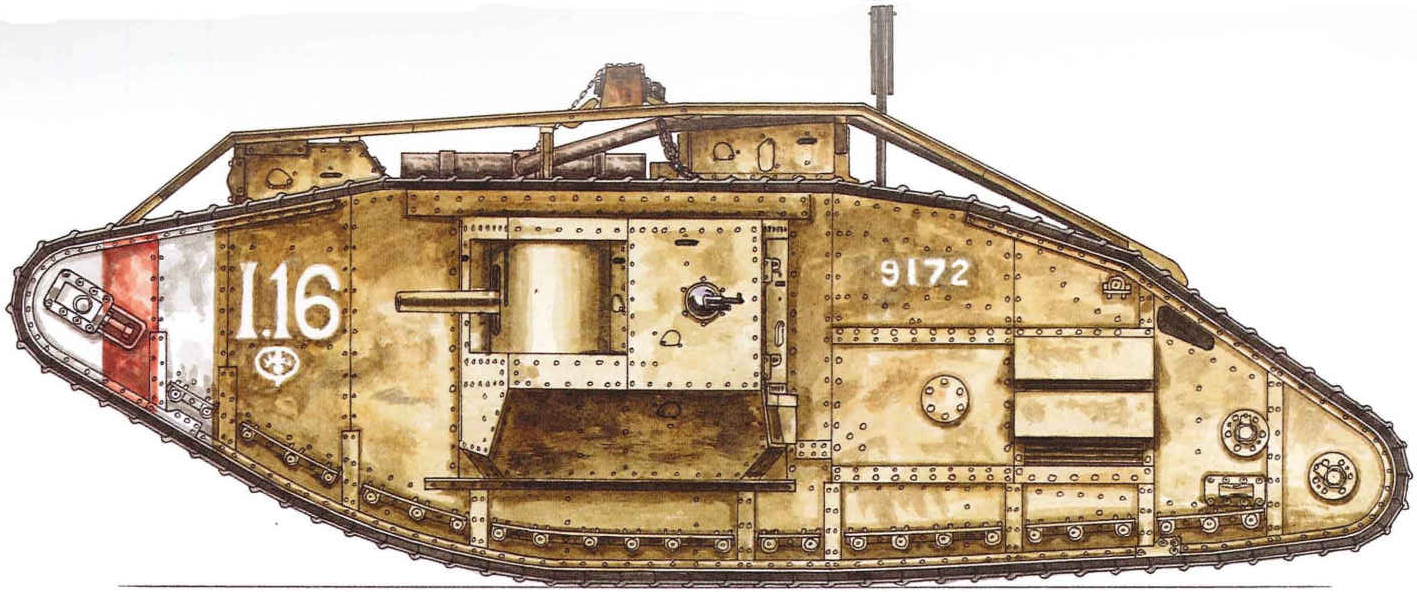
At some stage a bracket was riveted to the roof of some tanks, just in rear of this cab, which supported a substantial towing hook. This equates to the temporary measure known as the 'top towing' system used on some Mark IV tanks at Cambrai the previous year. The sloping part of the roof at the very rear, which supported a stowage tray on the Mark IV, was now formed from two large hatches, hinged at the front, which could be raised and propped open. No specific purpose is recorded for these, although ventilation must have been one. No doubt they were a help when loading stores aboard, a suitable place from which to release a pigeon and, as a last resort, as a means of escape. The vertical plate that forms the back of the tank contained a rectangular hatch, in the centre of which was a ball mounting for a rearwards firing machine gun. Compared with the Mark IV it was a lot easier for a man to move around in the back of the Mark V so there would be no great

A

MARK V MALE TANK, 9TH BATTALION, TANK CORPS, FRANCE 1918

There are four relatively foolproof ways to identify a Mark V from any other British tank of World War I. From the rear it should be possible to identify the hatch in the vertical back plate, which, in conjunction with the box-shaped rear cab is unique to the type. The cab itself is effectively a cube, visible from both sides and the rear. If the front and rear faces are vertical then it is a Mark V, if they are angled it is a Mark V*. Also on either side are the square ventilation panels near the back through which air passes to the radiator. They will immediately distinguish a Mark V from a Mark IV but they also appear on the Mark V*, which is longer and has the modified rear cab. From the front the most obvious feature is the different size of the two hinged flaps in the front plate of the cab. That on the left, as one looks at it, is of regular size for the driver while the one on the right, for the machine-gunner, is narrower. This quickly identifies a Mark V from a Mark IV but is not adequate to distinguish a Mark V from a V*.

The Battle of Moreuil (or Sauvillers), on 23 July 1918 was the second time that Mark V tanks were used in action. They were in the hands of 9th Battalion Tank Corps and were operating in support of the French 3rd Division. The attack was a success and the French so pleased that the entire tank battalion was awarded the Croix de Guerre and given the honour of wearing 3rd Division badge with the motto *Qui s'y frotte s'y brule* which roughly translated as *He who rubs against me is burned* which was worn on the uniform sleeve and later painted on the tanks.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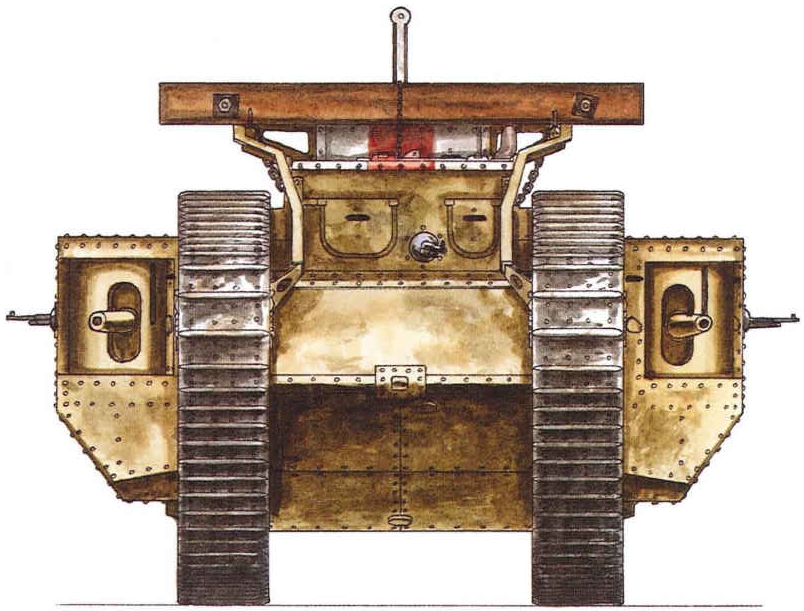
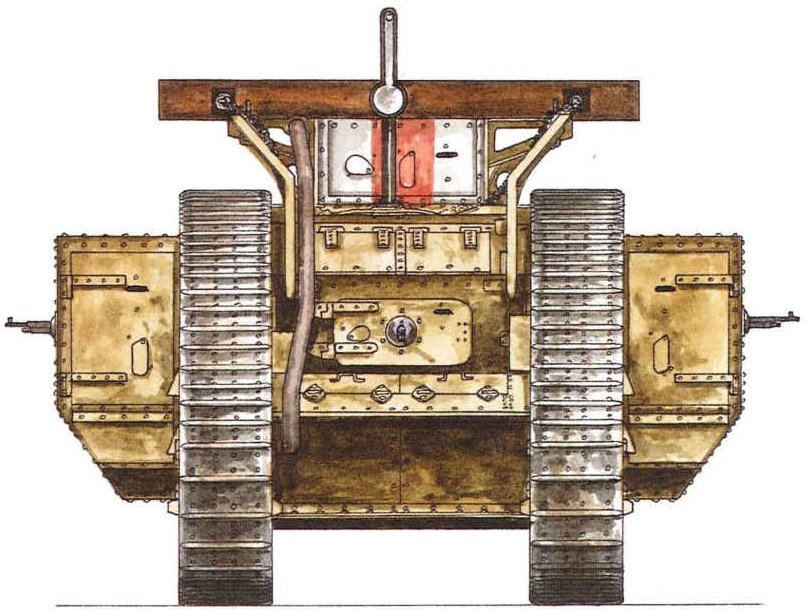
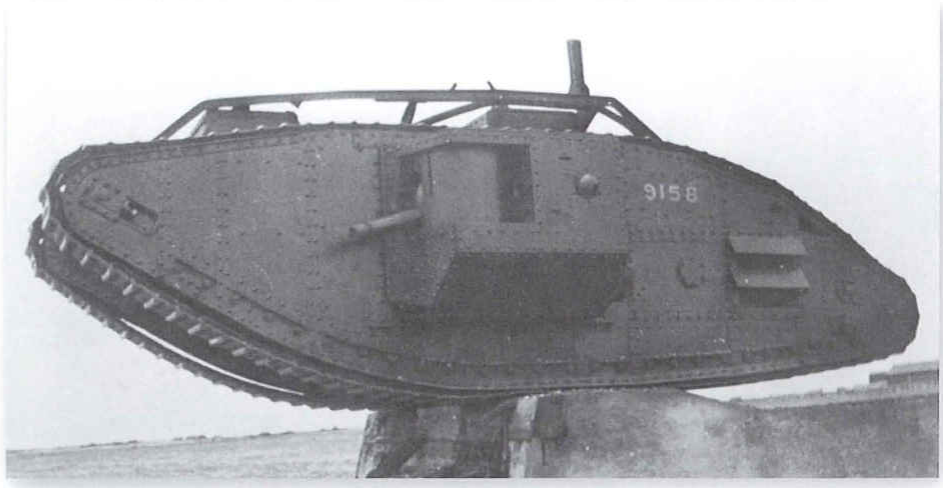






This picture of 9158, a male Mark V doing a balancing act, shows how the lipless tracks drop away from the frames, which made it a lot more likely that they would come off.

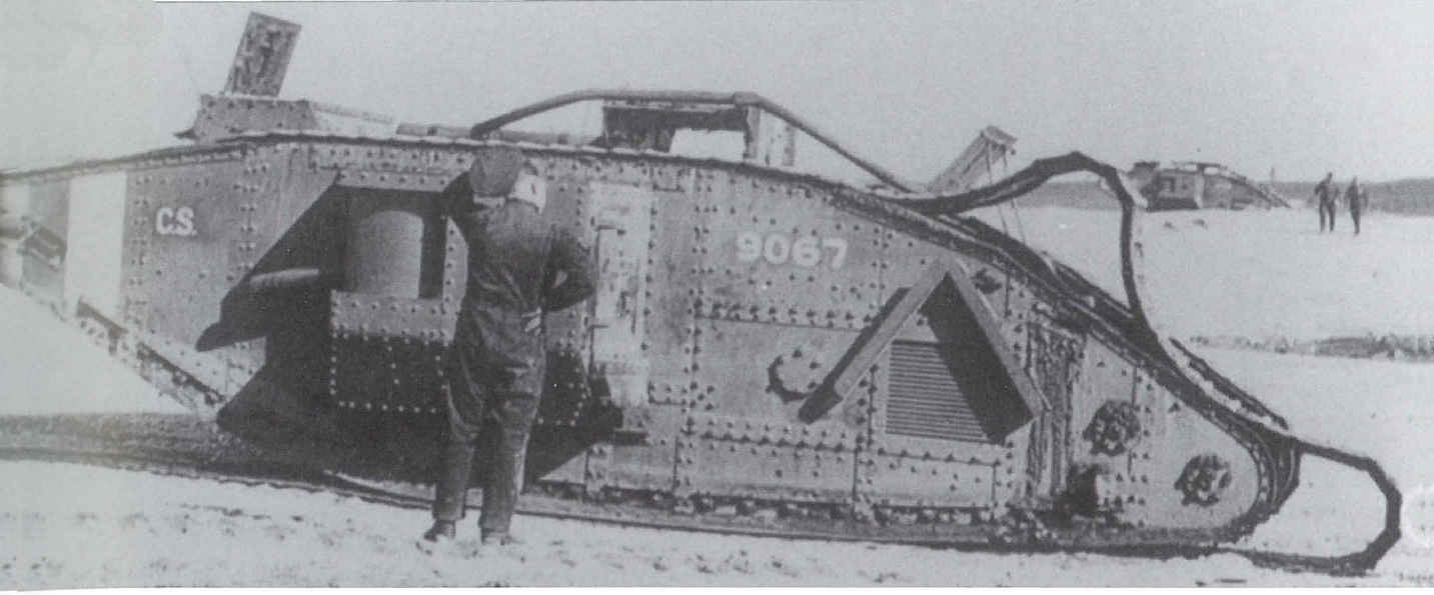
difficulty in working this gun, but it would need to be used with care. It is presumed to have stemmed from the habit of some enemy troops, particularly machine-gun teams, of lying low when the tanks went by in order to pop up and attack the following infantry. However it was said that the improved manoeuvrability of the Mark V meant that anyone employing these tactics was at some risk of being run over, if they were spotted by the driver. Near this hatch was a bell pull that an infantryman could use to attract the attention of the crew in battle.

At the very rear, sandwiched between the horns, was the armoured cover for the fuel tank. In fact it enclosed three tanks with a total capacity of 90 gallons, 15 more than in the Mark IV, which in theory extended the Mark V's range by ten miles to 45 miles. Fuel delivery to the carburettor was still by the Autovac system. Hinged to the rear of the petrol tank armour was a metal-framed carrying tray that appears to have been used for stowing drums of lubricant and similar large loads.

CREW DUTIES AND CONDITIONS

Despite the fact that one man could now drive the tank entirely on his own the Mark V still retained an official crew of eight men. The driver himself controlled a four-speed gearbox with independent reverse. This gearbox, manufactured by the Wrigley Company, was designed for use in railway locomotives with internal combustion engines, hence the requirement for an independent reverse. It was still necessary to stop the tank in order to change gear so the driver was trained to select a suitable gear for the ground ahead and stay in it as long as possible. Steering, on the other hand, was simplicity itself compared with the labour-intensive system employed on previous heavy tanks. The driver had a pair of levers that released reaction brakes on the epicyclic (or planetary) gearbox on one side or the other. This detached drive from the track on that side so that all of the engine's power went to the other track. Normally this would be sufficient to swing the tank around but if a tighter turn was required application of the footbrake locked the undriven track, and the tank would spin round on the spot.

The driver was in communication with the commander by means of a speaking tube leading back to the rear cab, and he also had in front of him a distance indicator, calibrated in yards, and a compass. If the engine was warm it was possible to restart it by means of an extra magneto, in reach of the driver.

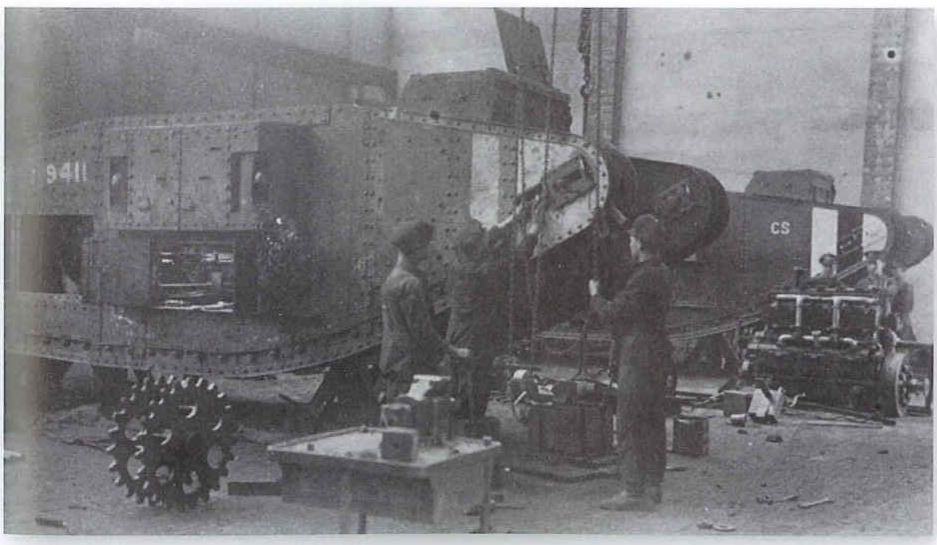


What to do? A Mark V of Central Schools at Bovington that has shed a track during a training run. Restoring it is heavy work but the tank will not go anywhere until it is done. Notice also that every flap and hatch on this tank is wide open, presumably to clear the fumes.

If not the crew reverted to the traditional method, using a detachable hand crank behind the engine. Those tanks that survived the war appear to have had electric starter motors fitted. A man sitting alongside the driver was the designated front machine-gunner. To his left was a fresh water tank and a revolver case. Four men attended the sponson guns, just as in all previous tanks: two machine-gunners each side in female machines, or a gunner and loader in the male version. The machine guns were all of the Hotchkiss air-cooled type to the traditional British .303 inch (7.62mm) calibre. The male tanks mounted two Hotchkiss six-pounders (57mm) with the shortened (23-calibre) barrel. A design appeared for a lighter version of this gun with a horizontal sliding breech instead of the vertical type, but there is no evidence that any were ever actually fitted in tanks.

A male tank was stowed with 183 rounds of shell and 24 of the new case shot. Quite a reduction compared with the Mark IV, although there appears to have been an increase in small-arms ammunition for the machine guns, no doubt based upon earlier experience.

The commander's cab at the rear was originally provided with a series of lookout points and pistol ports but most of these appear to have been eliminated later on; perhaps they proved to be too vulnerable. Even so it provided him with a far better view of the battlefield than he could have



These tanks were photographed in the workshops at Bovington undergoing a major overhaul. Both are jacked up on trestles with their tracks off and engines out; chain hoists notwithstanding, this was still very much manual labour.

obtained from the front cab although quite how well the speaking-tube link with the driver worked, or indeed the indicators to the gunners in male tanks is not clear. The eighth man, if he was not required for anything else, manned the rear machine-gun position when the tank was in action.

Despite the fact that the engine was totally enclosed by concertina folding panels, and equipped with a fan cooling system for the exhaust pipe, conditions for the crew inside a Mark V are said to have been far worse than in the Mark IV. This appears to have been due to the new ducted cooling system for the radiator, which drew in air from the outside, so that fumes built up rapidly inside the tank; there are many accounts of crew members becoming temporarily incapacitated by carbon monoxide poisoning. A sliding shutter had been incorporated in the ducting, which was supposed to supply fresh air to the interior of the tank but it appears to have been fighting a losing battle. Later an extra shutter was fitted, which drew contaminated air out of the crew area, and this appears to have made a difference. Otherwise things had changed little for the crews since 1916. The Mark V was a little bit faster than its predecessors in top gear but the ride was as bumpy as ever and the effect of incoming fire equally bad.

Another innovation, possibly the result of so many Mark IV tanks falling into German hands following the battle of Cambrai, was a charge of guncotton placed alongside the gearbox, which the crew were supposed to detonate should they have to abandon the tank. Although a number of Mark V tanks were knocked out in battle none are known to have fallen into German hands. However, since by the time the Mark V was used in action progress was almost entirely in the Allies' favour, this would have reduced the chances of any being captured.

B

1: MARK V* MALE TANK, COMPANY A, 301ST TANK BATTALION, AMERICAN EXPEDITIONARY FORCE, FRANCE 1918

The 301st was the only American Heavy Tank Battalion to see action during World War I and it was equipped exclusively with British tanks Mark V and V*; it therefore served alongside the British Tank Corps and adopted the British battalion organization of three companies, each of four sections of four tanks. The Americans do not appear to have applied any individual markings or names to their tanks at all, so the only features visible would be the tank's own number, in white towards the rear, and the white/red/white recognition stripes, which could also be seen on British tanks.

The only surviving example of a Mark V* tank, a male machine, can be found in the Patton Museum of Cavalry and Armor at Fort Knox, Kentucky. The triangular device is the insignia of the United States Tank Corps.

2: MARK V* FEMALE TANK, COMPANY C, 301ST TANK BATTALION, CAMP MEADE MARYLAND 1919

When the 301st Heavy Tank Battalion returned home at the end of the war it was first based at Camp Meade, Maryland. Here they adopted a new system to identify which company a tank belonged to, based upon the British system of identification stripes seen during the war. Company A simply retained the white/red/white arrangement, Company B employed two white stripes separated by a stripe of the same width in the regular brown tank colour while Company C, as shown here, adopted red/white/brown with red rearmost. However this scheme does not appear to have lasted very long and it is not entirely clear whether the pattern was repeated on the front and rear cabs of the tank.

Another matter that is not entirely clear is whether the Americans retained the Hotchkiss machine guns normally fitted to these tanks or modified them to accept an alternative. In most surviving photographs they appear to carry no weapons at all.

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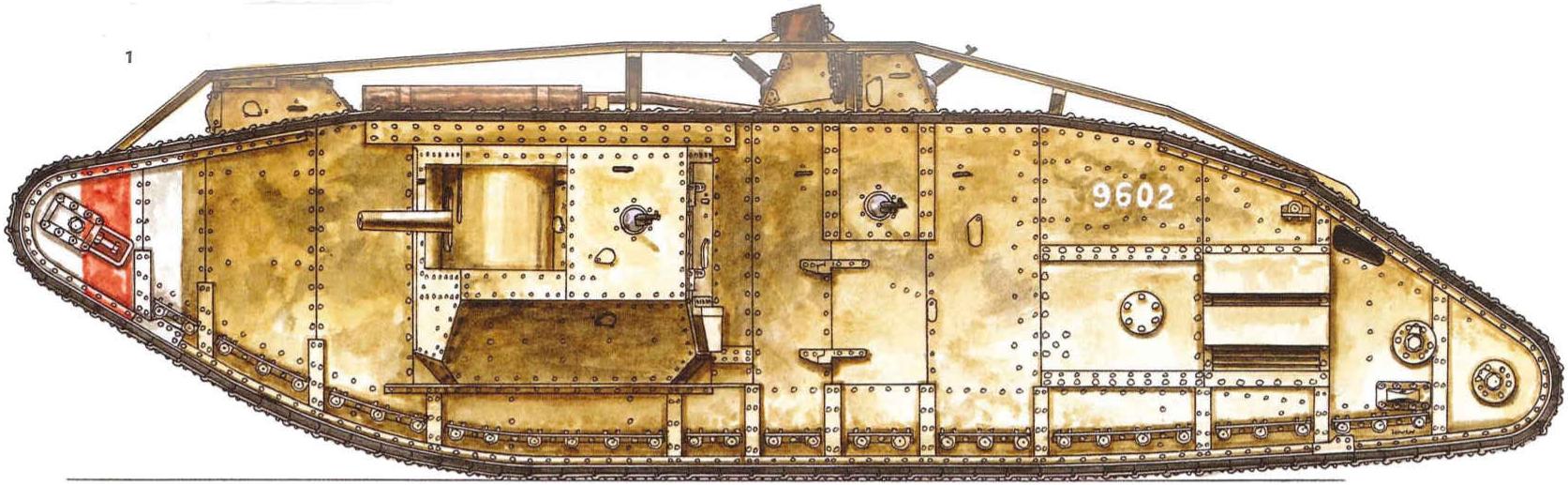

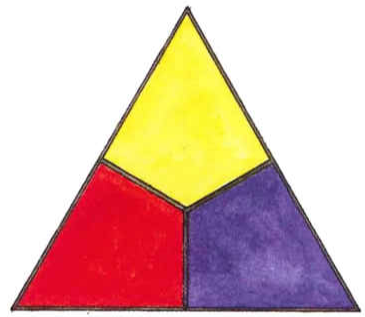

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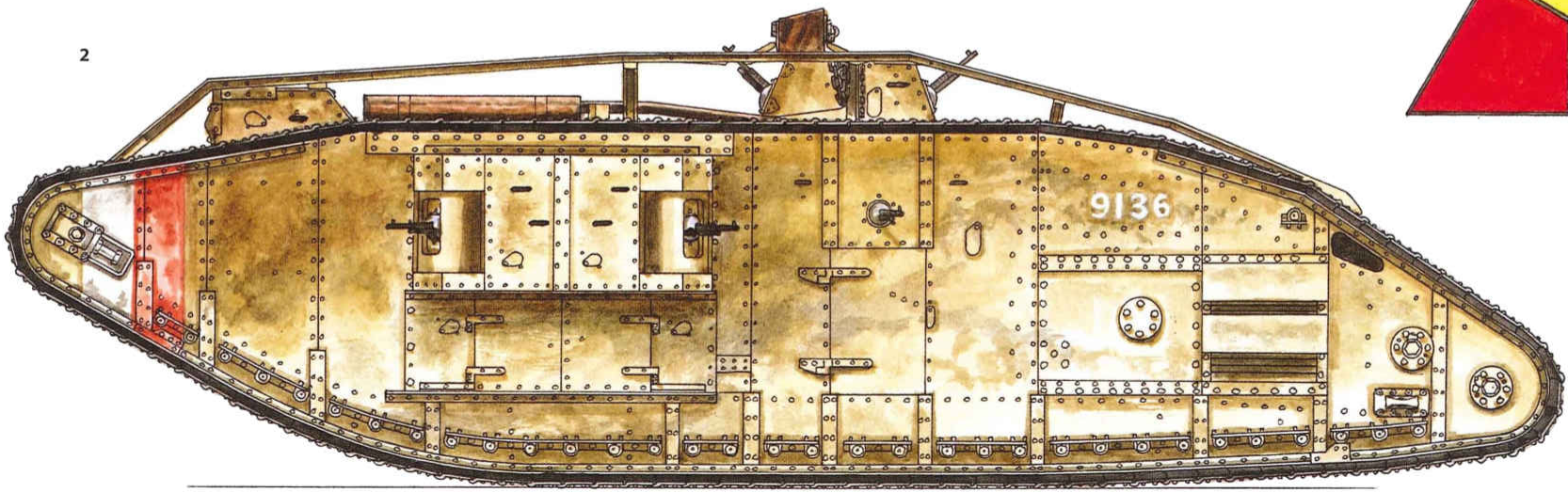


The problem of wider trenches, first confronted at Arras and then Cambrai in 1917, resulted in the development of the Tadpole Tail extension fitted to some Mark IV tanks but never used (see Osprey/New Vanguard No. 133), and there are a few instances of the same device being seen on Mark V tanks. There is no reason to suppose that they worked any better on the new tank but in any case something much better was in the offing.

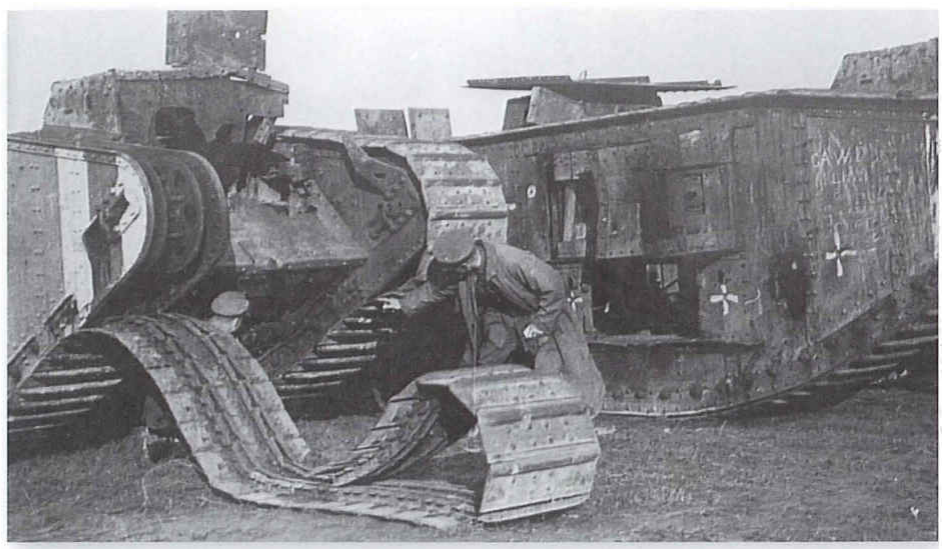
THE MARK V*

Quantity & Type	Hull numbers
200 male tanks	9501–9700
200 female tanks	9751–9950
300 male tanks	10001–10300
Of the above 579 were completed at the time of the Armistice followed by a further 66 after that date, bringing the total of Mark V* tanks built to 645.	

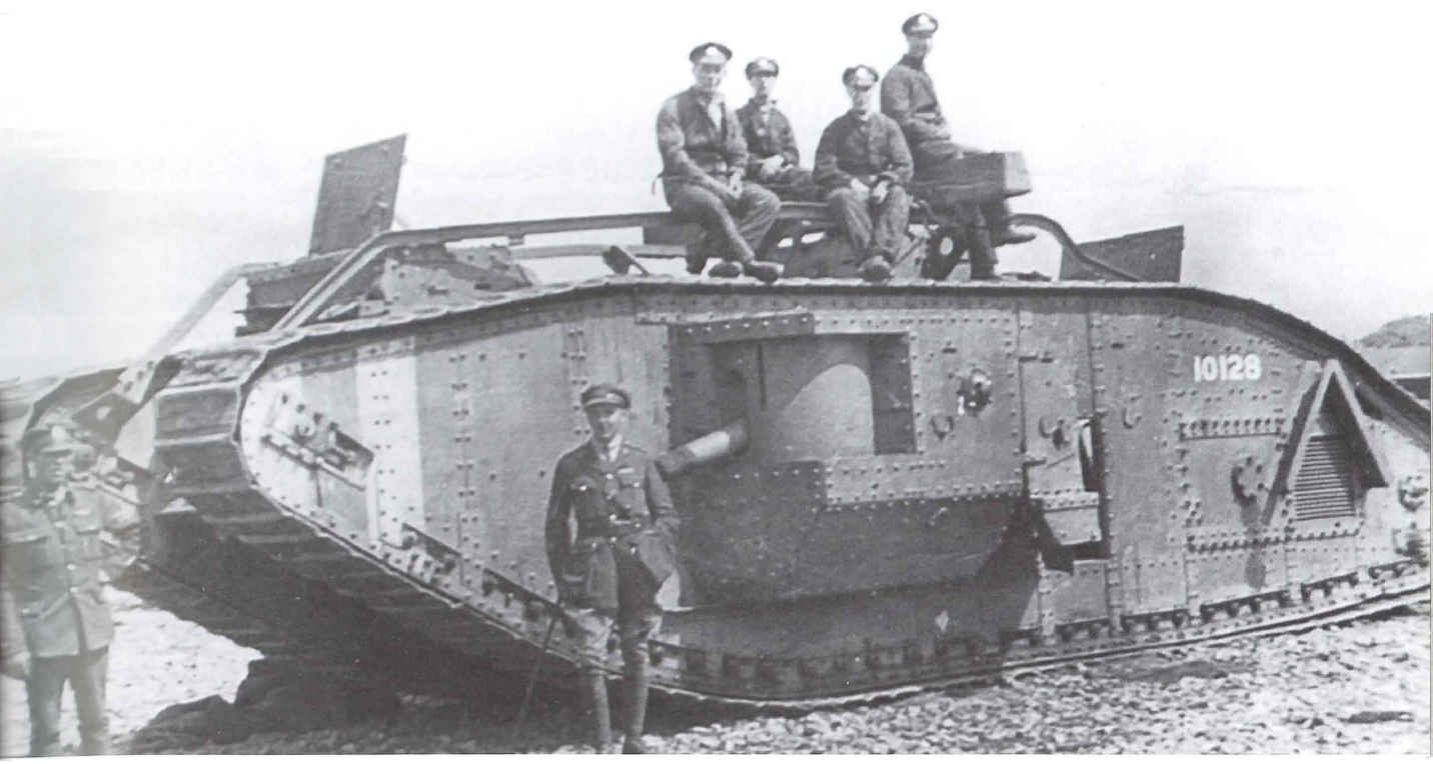
In the summer of 1917 Tank Corps Headquarters in France instructed Central Workshops to investigate the possibility of building a longer tank. Searle handed the task over to No. 2 Repair Section, which in effect created a 'stretched' Mark IV by cutting a tank in half and inserting an extra six feet of hull, adding about four tons to the overall weight. One source claims that the design was the work of Lieutenant J. G. Rackham.

Searle says that in this form the tank was even more underpowered, which is hardly surprising; it was most noticeable when the tank turned, or swung, and it was not just the additional weight, as Searle appreciated, but the extra track in contact with the ground that made turning so difficult. We have no hard evidence as to what this improvised tank looked like but it represents the origins of what later became the Mark V*. The practice of adding an asterisk, or star, to denote a modification to an existing design seems to have originated in Royal Artillery procedure.

There is no truth in the suggestion that existing Mark V tanks were converted to Mark V* by stretching the hull and other modifications; all Mark V* tanks were of totally new construction and all built in Birmingham



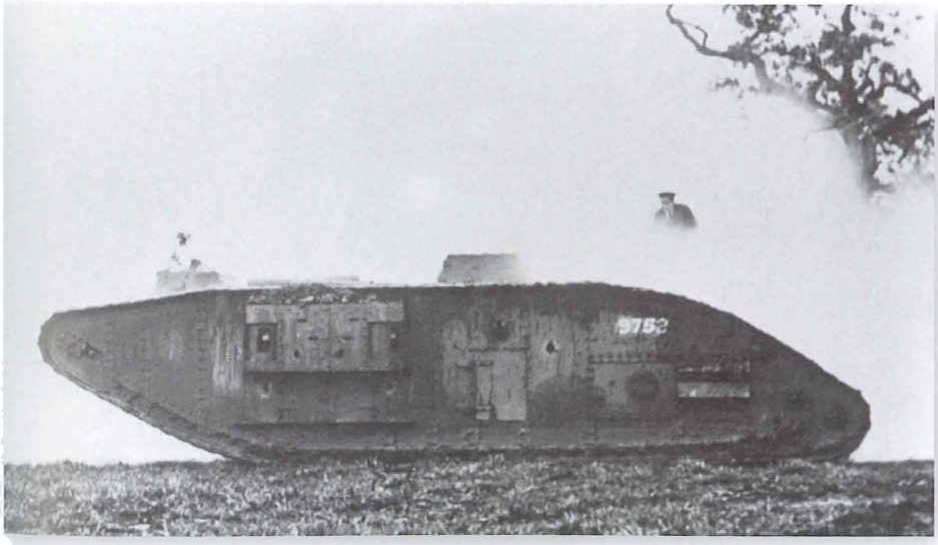
This view shows salvage work being carried out on a damaged Mark V*. Notice how the flanged tracks hang down from the switch plate where they engage with the track frames. These are the wider (26½-inch) tracks. The photograph was taken at Central Workshops, France, in October 1918.



Mark V* male tank No. 10128 at Bovington, training men for the 1st Canadian Tank Battalion in 1918. Notice the inverted V-shaped device to keep rain and mud out of the radiator cooling inlet.

under the Metropolitan umbrella. However it should be noted that of the 700 tanks ordered, 579 were completed by the time of the Armistice and a further 66 subsequently before the contracts were wound up.

The Mark V* was easily told from the Mark V by its greater length but there were two other features worth recording; on each side, just abaft the sponson was a door in the side, which made getting in and out a bit easier, and a machine-gun mounting was normally seen in the panel directly above this door, although in some cases this was eliminated. Most significant was a redesigned rear cab that had sloping front and rear plates instead of the vertical ones on the Mark V, which included Hotchkiss ball mountings in both faces. Two reasons have been suggested for this: first that, based upon experience in built-up areas, such as the village of Fontaine-Notre-Dame in the Cambrai battle, it gave the tanks a weapon capable of dealing with enemy troops in the upper storeys of house; and second, that it enabled the tank to fire back at attacking aircraft. Given the chances of seeing one of these,



A Mark V* female taking part in smoke-screen tests using sulphonic acid, injected into the engine exhaust system.

never mind hitting it, the former suggestion seems to be the more likely. Mark V* tanks are more commonly seen with the wider, 26½-inch (673mm) tracks and at various times they are seen with baffles of one sort or another over the side air inlet grilles to keep mud out.

The logic behind a longer tank was clearly to cope with wider trenches such as those the Germans were incorporating into their extensive defensive system, which the Allies always referred to as the Hindenburg Line. It meant that a longer tank could tackle a succession of such trenches without having to worry about carrying a fascine or crib. It also had a limited personnel-carrying capability of just 14 or 15 men, and up to four machine guns to be dropped off in captured trenches during the advance, what the chronicler of 13th Battalion referred to as 'the Trojan Horse of the (Tank) Corps'.

THE MARK V AND V* IN SERVICE

The first Mark V ran for the very first time on 18 January 1918 but a contemporary source adds that there was no time to conduct the usual endurance trials; production would have to commence at once. In April the first production tanks started to arrive in France. Again it seems that there was precious little time for detailed familiarization, either at Central Workshops or indeed at battalion level. On the other hand staff at Central Workshops had a bit of prior experience with what later became known as the Mark V Experimental Machine E. M. E. Those letters give away what it really was. E. M. E. (Experimental Machine E) was a Mark II tank, one of the competitors in the Oldbury Trials of March 1917 that was used to demonstrate Wilson's epicyclic steering system. Subsequently fitted with a Ricardo engine it was, in mechanical terms, essentially a Mark V and in that form at least provided the staff at Erin with a sample to work upon.

The 8th and 13th Battalions of the Tank Corps were among the first to re-equip with the new tank, both having had some experience of the Mark IV. A section commander of 8th Battalion, Captain Douglas Hickey, remarked that one could walk comfortably behind a Mark IV and still keep up with

This unusual photo shows a Mark V male, No. 9038, apparently ditched. It is not only carrying a trench-crossing crib but also a pair of wooden trench bridges of the kind used by the artillery. Other features to note are the stores, carried at the back of the tank and the open rear hatch, occupied by a crew member.

it but the improved speed and manoeuvrability of the Mark V meant that you had to step out to keep pace. In its War Diary 8th Battalion claims that it was the first Tank Corps unit to receive the new tank, in April 1918, but oddly fails to make much of this by way of comparison, merely saying that the tanks arrived at the Tankodrome at Blingel where their crews went to pick them up.

The 13th, although it had trained on the Mark IV, had only limited experience of using it in action but seem to have been far more impressed with the Mark V:

> An engine of new design gave both greater speed and greater turning power, while a system of epicyclic gears made turning easy and under the sole control of the driver. The officer was free to supervise his crew, the gunner was free to use his weapon to the best advantage.

It would be both of these battalions that took the Mark V into action for the first time, at Hamel on 4 July 1918. This battle, which was largely an Australian affair, involved all of 8th Battalion plus B and C Companies of 13th Battalion, that is 60 tanks in all, supported by a dozen supply tanks of the Mark IV type. Liddell Hart makes the point that, probably for the first time, all of the fighting tanks were up to time, on the start line with no breakdowns, which he ascribes to the quality of the new tanks. However it must have owed something to the dedication of the crews too, for they had to be on their mettle. The Australians had little time for tanks, following what they perceived to be a massive failure that let them down at Bullecourt back in April 1917, so the Tank Corps had something to prove. In the event it was a considerable success due to the tanks, the quality and detail of Australian staff work, and the fact that it had limited objectives; not one of those open-ended, ambitious schemes so beloved of Field Marshal Haig. Casualties to the Tank Corps were minuscule by the standards of the day; 16 men wounded and five tanks disabled, all of which were recovered from the battlefield afterwards.

Preparing a tank for movement by rail could be a tricky and dangerous business. Here one tank is used to push in the sponson of another. Fifth Battalion, Germany, 1922.

There is no evidence of Mark V supply tanks except for this, taken at Bovington after the war when the survivors had been relegated to other duties.

About three weeks later, on 23 July, 9th Battalion went into action with the French 3rd Division 'La Grenadiere' in a battle that the British know as Moreuil, although the French usually call it Sauvillers. Once again this proved to be a trial of the stamina of the Mark V tanks and their crews. The journey to the battle field required a 25-mile (about 40km) run, or trek to use the term of the day, on their tracks and a long train trip. Thirty-five of the 40 tanks that set out were in a fit condition to fight upon arrival. The attack was so successful, although tank casualties were much higher than at Hamel, that the entire battalion was awarded a collective Croix de Guerre in addition to individual awards and given the honour of wearing the cap badge of the French 3rd Division as an arm badge.

The battle with which the Mark V, and the Mark V* come to that, are best associated is undoubtedly Amiens, which was launched on 8 August 1918. The initial idea was to squeeze a massive salient in the front line, created by the Germans during their spring offensive of that year. In effect, however, it was the first of a series of battles known collectively, if slightly inaccurately, as the Hundred Days, which culminated in the Armistice of 11 November 1918.

Figures for the number of tanks taking part are at odds, but impressive nonetheless. These are based on Fuller and show Mark V 378, Mark V* 72, Mark IV 84, Medium A 96 and 16 Austin Armoured Cars; 646 machines in all, though this did not include tanks in the supply role belonging to the specialist Carrier Companies. Infantry was drawn from the Australian, British, Canadian and French armies supported by a massive amount of artillery, although based on the experience of Cambrai the previous November there would be no lengthy bombardment in the days leading up to Zero Hour.

ORGANIZATION

A booklet published by the War Office in 1918 includes a full establishment table for a tank battalion in the Tank Corps in France although in some respects it might be regarded as a work of fiction. In theory, as far as tanks themselves were concerned, it differed little from the organization of battalions

at Cambrai a year earlier but other things had changed in the meantime. There were nine battalions at Cambrai but 15 at Amiens, 11 of which would be equipped with Mark V and V* tanks. So despite the fact that, according to one source, these tanks were arriving in France at the rate of 50 a week there would not be enough to equip all the battalions to full strength before the battle began.

The Establishment Table shows that a battalion was organized on the basis of a headquarters and three companies, each company composed of four sections and each section of four tanks. That totals 16 tanks per company and therefore 48 tanks per battalion. However the reality was something else. For example 1st (A) Battalion claims that on the eve of Amiens it mustered 24 Mark V tanks and ten Mark V*, which with one left over works out at 11 tanks per company; this is indivisible by four, suggesting that some sections had only two tanks. Among the other battalions, 2nd (B) and 4th (D) can show 12 tanks per company at the start of the battle although, of course, numbers dwindled rapidly as the fighting began, as we shall see.

However, tanks are only a part of a Battalion's establishment. They also had 12 motorcycles, nine bicycles and, of all things, three riding horses. In terms of fighting manpower there were 196 officers and men per company plus at least 34 more per battalion in the shape of the battalion commander, a lieutenant-colonel and under him various other officers and men, including such trades and duties as shoemaker, cook, groom, batmen and orderlies. And this does not include what are described as attached personnel, including an officer and four men of the Royal Army Medical Corps, a staff sergeant fitter of the Royal Artillery, an armourer from the Royal Army Ordnance Corps and even one NCO and man from the Army Gymnastic Staff responsible for physical and bayonet training.

Battalions had been grouped by brigades from 1917; at the time of Amiens there were five such brigades but by no means all the same. For example, 3rd Tank Brigade consisted only of two battalions (3rd and 6th in Whippets), whereas 5th Tank Brigade had four battalions while the others had three

Four 16th Battalion tanks, probably all composites, on Warflat wagons in Germany. The tank nearest the camera is fitted with the wider 26½-inch (673.1mm) tracks. All tanks are stacked high with stores and one of them is carrying a spare pair of drive sprockets.

each. Transport and signalling staff were administered at brigade level. Even that is not the end of it: the Tank Corps in France was a big organization by 1918, with all manner of departments and depots although these carry us beyond the scope of this work.

THE BATTLE OF AMIENS

Accounts of Amiens are many, and somewhat awkwardly varied. For example J.F.C. Fuller in *Tanks in the Great War 1914–1918* (John Murray, London, 1920) states that initially only 1st and 15th Battalions were equipped with the Mark V* tank whereas the others, that is to say 2nd, 4th, 5th, 8th, 9th, 10th, 11th, 13th and 14th had only the Mark V type. However the War Diaries tell a different story, giving the impression that most battalions were issued with a mixture of the two types. There is a wealth of information in these documents but it is rather fragmented, since each chronicler appears to have his own priorities; many of them are worth recording, nonetheless. For example, 1st Battalion, discussing their Mark V* machines, claim that in the extra space it was possible to cram two Lewis guns, each with a two-man crew; two Vickers guns, each with a four-man crew; an infantry scout; and one officer, a total of 14 men in addition to the regular crew. Another battalion claims that they could get 15 men into the tank and found room for extra ammunition on the roof. Bearing in mind that conditions inside were bad enough for the crew, who were used to it, the suffering inflicted on unprepared infantry was many times worse. Many are said to have left their tank at the appropriate place feeling so ill that imminent death seemed preferable to fighting.

Another interesting issue is thrown up by an entry in the War History of the 5th Battalion. They received some Mark V tanks in May 1918 and more in June, against which has been written 'wide tracks'. This presumably reflects

C

1: MARK V HERMAPHRODITE, OR COMPOSITE, TANK, COLOGNE 1919

The idea of a hermaphrodite, or composite, tank with a male sponson on one side and a female on the other seems to have been considered during the war although there is no hard evidence to show that any were produced. However at the end of the war, when tanks were being prepared for use in Russia and with the occupation forces in Germany, they seem to have become the norm, albeit only in the case of the Mark V as far as one may tell.

The task of converting tanks from male or female to composites was not simply a matter of swapping sponsons around. The ammunition stowage was specific to each type so arrangements had to be made to accommodate this although details are not recorded. To begin with there were five Tank Corps battalions in Germany but this was rapidly whittled down to just one company by April 1920.

2: MARK V MALE TANK WITH A CRIB TRENCH CROSSING DEVICE DURING THE ATTACK ON THE HINDENBURG LINE IN SEPTEMBER 1918

The crib was designed to fulfil the same function as the fascine used at Cambrai in November 1917. By dropping it into a wide trench it provided support for the rear end of the tank as it crossed over and prevented it from getting stuck. Designed and built at Tank Corps Central Workshops in France the crib was bolted together from stout wooden beams and angular steel, braced by lighter steel bars. This proved strong enough to support a tank weighing up to 30 tonnes as it crossed over. Compared with a fascine the crib was much lighter, which reduced the strain on the tank that carried it and of course it could be dismantled in situ and taken away for further use if not too distorted.

Cribs were only fitted to Mark V and a few Mark IV tanks for specific operations, Mark V* tanks could manage without them due to their greater length

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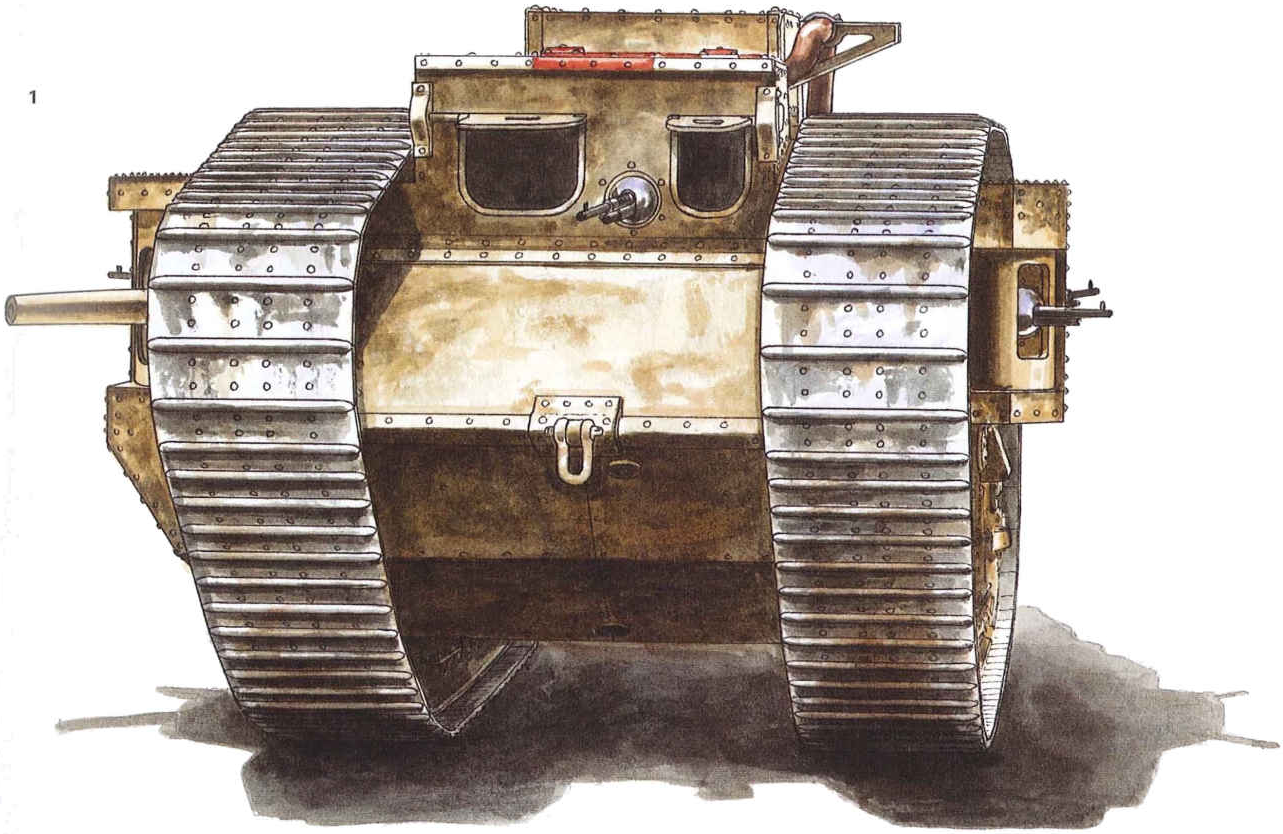
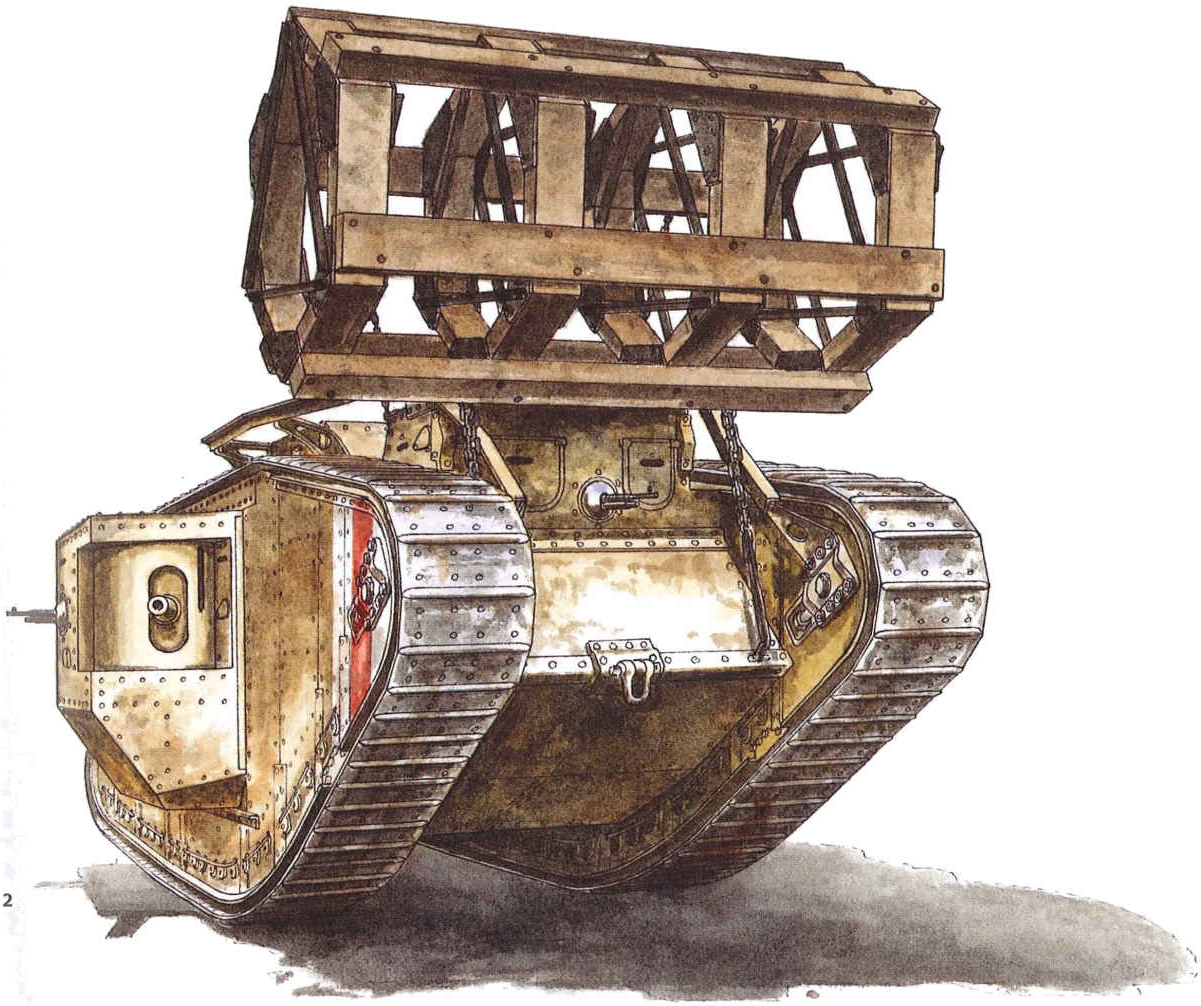




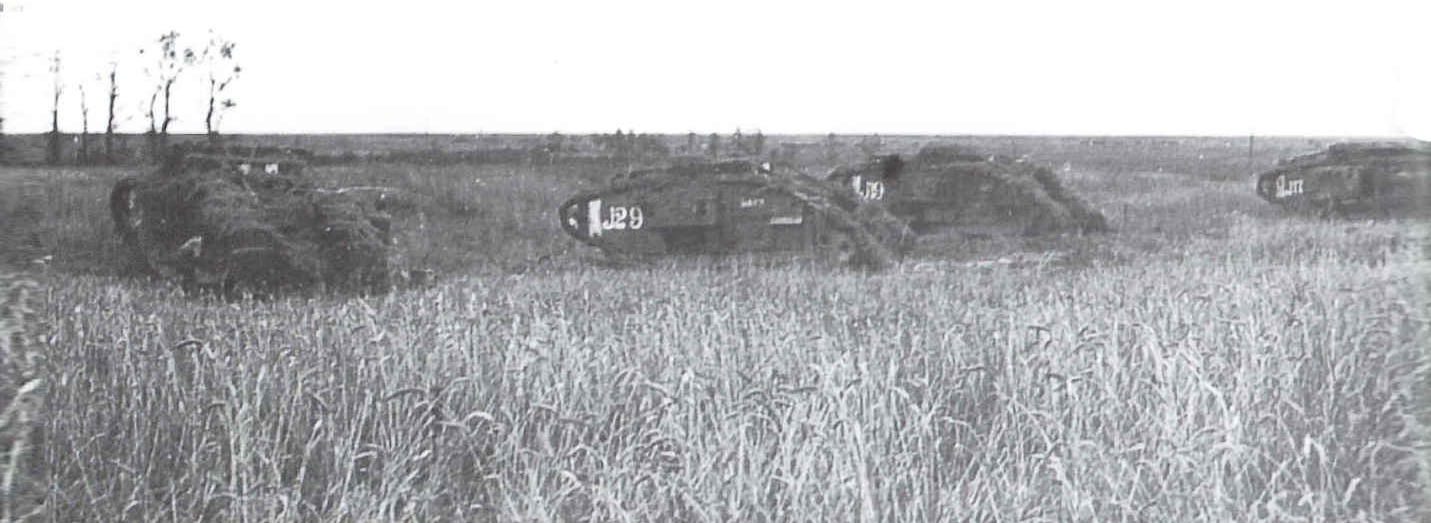
2

A Mark V male tank of 8th Battalion ditched on the Amiens battlefield with a Mark IV in the background. The presence of an Australian perched on top reminds us that in this battle 8th Battalion was among those supporting Monash's Australian Corps. There is no sign of the unditching equipment on this tank and the paintwork is very pale; maybe it has been there for some time.

the fact that around this time a new, wider track plate was introduced – 26½ inches (673mm) instead of 20½ inches (520mm) – in order to spread the weight and reduce ground pressure a little more. It is reported elsewhere that these wider tracks resulted in a problem on the British railway system and in particular the lines of the South Eastern & Chatham Railway, which led to the cross-Channel ferry port at Richborough in Kent. Apparently there were places where the edges of the wider tracks fouled the platform edge at some stations, although the solution seems to have been rather drastic. According to this report those tanks fitted with the new, wider tracks had a section of them removed and replaced by the narrower type, which were changed again before the tanks were taken on to the ferry. Since, one imagines, each tank had to be taken off the train in order to change over the tracks, the calculations required to ensure that, when it climbed back on to the train the tank finished up with the narrow tracks along the bottom, would appear to be stupendous. And while on the subject of tracks it is also worth recording that at around this time a new type of lipless track was introduced that did not need to engage with the track frames to stay in place. One battalion commander, writing later in the year, complained that lipless track gave endless trouble, particularly on long runs. Presumably if the track stretched and became slack it was likely to drop away from the frames and fail to re-engage – the very problem that had plagued the builders of the Number One Lincoln Machine back in 1915, which resulted in the design of Tritton's original lipped track.

The 11th Battalion had a different, if not unheard-of, complaint. They collected their tanks, recorded as Mark V and Mark V*, from the depot

Mark V tanks of 10th (J) Battalion try to camouflage themselves with grass near Albert on 9 August 1918. The vivid markings tend to spoil the effect but there is precious little cover anywhere.



at Erin on 9 August 1918, the day after the Battle of Amiens began. What they objected to was the vivid red/white/red stripes painted on the nose of each tank around that time; they were convinced that these provided enemy gunners with an easy aiming point. The stripes had been adopted in order to distinguish tanks in British service from those captured and re-used by the Germans. The same complaint resurfaced in World War II, particularly in respect of the white Allied recognition star, but it was never substantiated so the stripes remained, as did the star a generation later.

The Germans did not field any of their limited number of tanks in August or September 1918, and even when they did later in the year the only encounter was between Mark IV tanks, which does not concern us here. However the 8th Battalion War History mentions an action overnight on 10th/11th August when one of their Mark V tanks opened fire on a wrecked Mark V* that the Germans had turned into a machine-gun nest. No result is given but one assumes that the wrecked tank came off worse. It was probably the only time, during the early stages of the Amiens battle, when one British tank fired upon another intentionally.

Casualties among the tanks were undoubtedly high, due in no small part to the number of artillery batteries, practised in anti-tank work, that the enemy deployed in the open to meet the attack. Also, of course, with so many tanks on the battlefield there was an abundance of targets. Even so it is notable that, as the numbers dwindled day by day due to casualties and breakdowns, the percentage of those knocked out compared with those in action grew proportionately. For example by the third day only 67 tanks of all kinds were fit to send into action, of which around 30 fell victim to the German guns. It was a high attrition rate of a wasting asset.

However, it was not all doom and gloom. There are 101 ways that tanks can be disabled on the battlefield and so long as the area remained in British hands it would be possible to recover tanks and repair many of them for future use. It is a point worth bearing in mind whenever tank casualties are discussed.

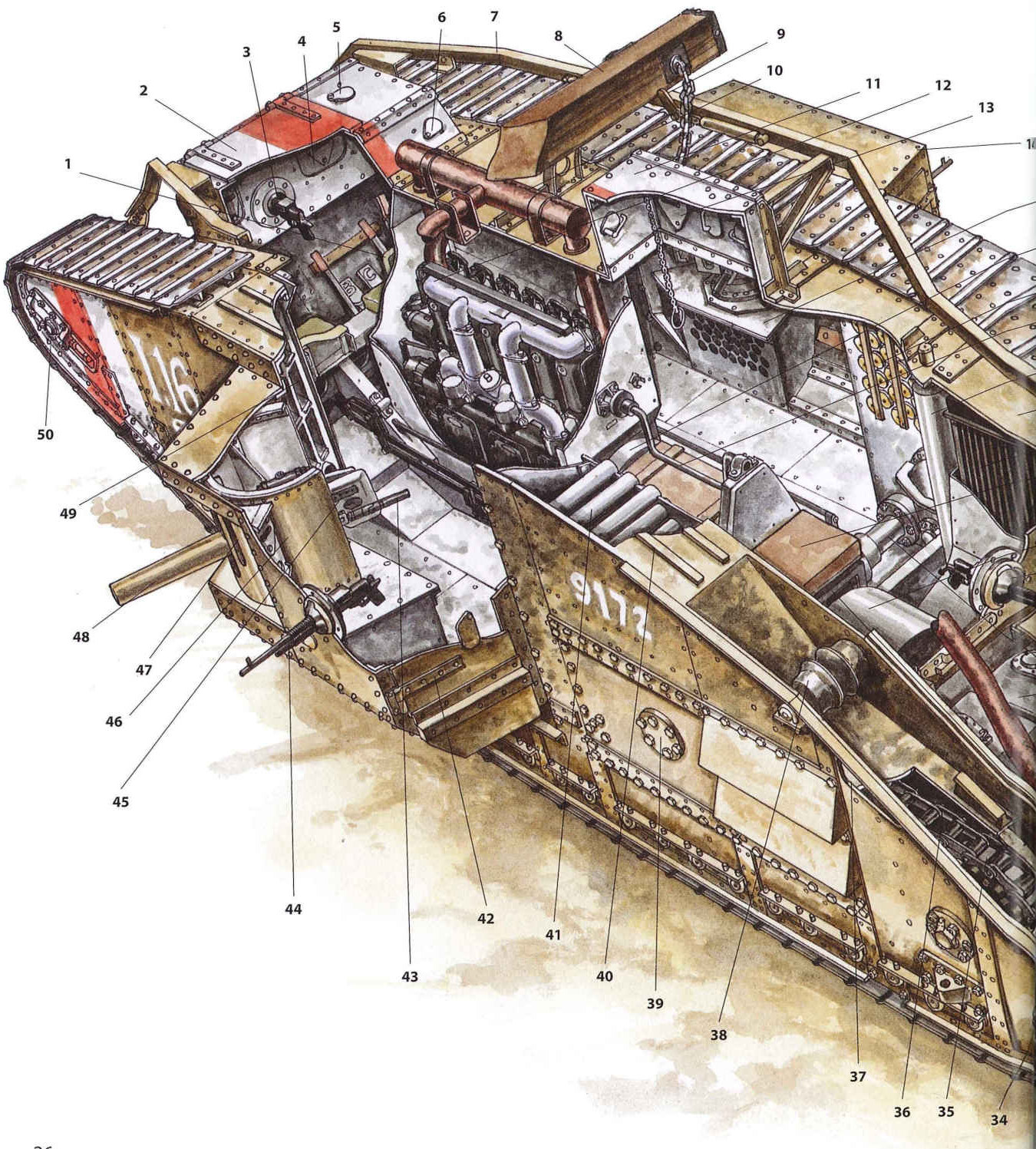
J.F.C. Fuller, considered by many at the time as the doyen of tank warfare specialists, gave it as his opinion that from Amiens onwards neither the Mark V nor even the Whippet were anywhere near fast enough for the new era of open warfare. It is certainly true that the Mark V, a direct descendant of the Mark I of 1916, was by definition a trench warfare machine whereas the

8th Battalion Mark V tanks with cribs moving up to the Hindenburg Line late in September 1918. A Mark IV supply tank is just visible through the mist on the left. Those signal cables in the foreground will be useless after the tanks have gone over them.

D MARK V MALE TANK

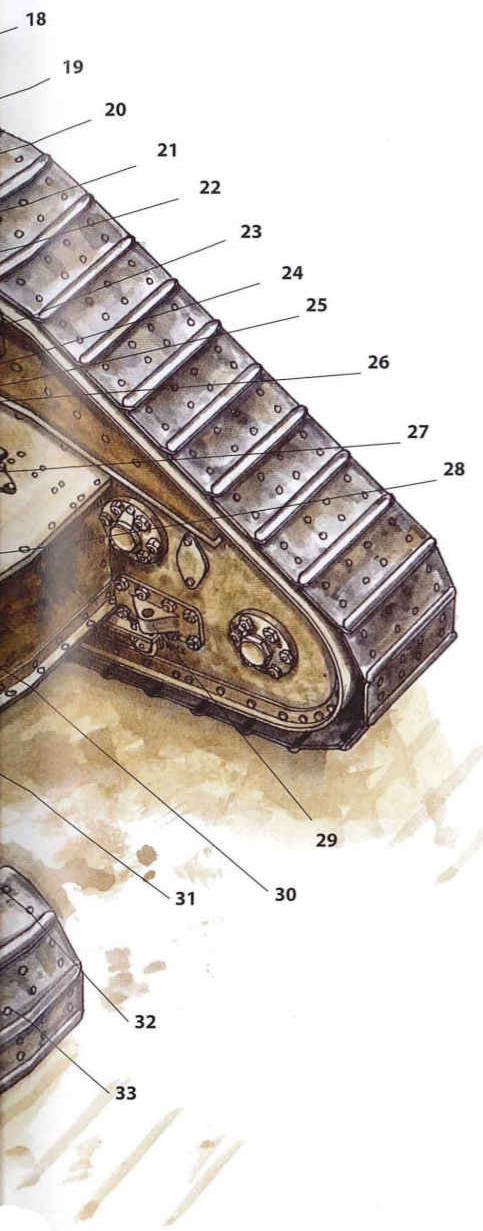
Viewed from above and behind, the spacious interior of the Mark V becomes evident. Without the bulky presence of the differential and box radiator of the Mark IV there is room for a crew member to move around and serve the rear mounted Hotchkiss machine-gun as required. Further forward however the taller Ricardo engine effectively divides the tank in two halves, making it difficult for crew members on one side to see their colleagues on the opposite side.

In action the tank commander stands on a platform immediately behind the starting handle and observes the battlefield from the armoured rear cab. The sides of this box are hinged at the top making it possible for two crew members to reach out and attach the chains on the unditching beam to the tracks. For this reason the beam is now carried on top of the tank, close to this cab and secured by special spring clips to prevent it from breaking free when not required.



The escape facilities are much enhanced over earlier models. In addition to the doors in each sponson there is a good sized hatch on the roof of the front cab, two very large hatches in the roof at the back and, of course, the door in the vertical rear plate. Unless it caught fire the crew would be able to leave the tank in the safest direction in respect of incoming fire. Under such circumstances one crew member would have the duty of setting off a small explosive charge designed to destroy the gearbox and render the tank useless if captured. Other crew members would take the machine-guns with them and remove the firing locks from the six-pounder guns.

I.16 would have been in the second company of I, or Ninth Battalion Tank Corps and in addition to the white/red/white recognition markings on the front horns and upper surfaces bore the badge of 3rd French Division following its successful debut action with Mark V tanks in support of the French Division at Moreuil on 23 July 1918. For more detail of this badge see Plate A.



Key

1. Driver's controls
2. Cab roof hatch
3. Front machine-gun position
4. Driver's front flap
5. Pistol port & periscope aperture
6. Pistol port & lookout aperture
7. Unditching beam rail
8. Unditching beam
9. Unditching beam securing catch
10. Engine exhaust manifold
11. Command cab
12. Ricardo 150hp six-cylinder engine
13. Rotating vision device
14. Starboard sponson
15. Gun pedestal & ammunition stowage
16. Flywheel
17. Ammunition stowage
18. Starting handle
19. Water tank
20. Rear roof hatch
21. Radiator
22. Commander's stand
23. Radiator cooling fan
24. Rear door
25. Hotchkiss machine-gun & mounting
26. Track lubrication box
27. Fuel tank hatch
28. Fuel tanks
29. Towing shackle
30. Gearbox output shaft
31. Exhaust tail pipe
32. Primary gearbox
33. Track plate, 20.5 inch
34. Drive sprocket
35. Intermediate sprocket
36. Roller chain loop
37. Mud chute
38. Top track roller
39. Epicyclic shaft boss
40. Track skid rails
41. Ammunition stowage tubes
42. Sponson door
43. Gun control arm
44. Hotchkiss .303 inch machine-gun
45. Breech shield
46. Rotating gun shield
47. Sighting aperture
48. Six-pounder (57mm) gun barrel
49. Machine-gun ammunition box stowage
50. Track tension adjuster

Specifications

Crew: 8

Weight: 29 tons

Power to Weight ratio: 5.17bhp/ton

Overall length: 26ft 5 in.

Overall width (male): 13ft 6in.

Overall height: 8ft 8in.

Engine: Ricardo crosshead valve, water-cooled straight six 150hp @ 1250rpm

Transmission: Wrigley four-speed primary box with independent reverse and Wilson two-speed epicyclics

Fuel capacity: 93 gallons

Max. speed: 4.6mph

Radius of action: 45 miles

Fuel consumption: 2.06 gallons per mile

Ground pressure: 28.7lb per square in.

Trench-crossing capability: 10ft

Armament: two 6-pdr (57mm), 23-calibre, quick-firing guns and four 7.62mm Hotchkiss air-cooled machine-guns

Muzzle velocity (6-pdr): 1,348 ft/sec.

Max. range (6-pdr): 7,978 yards.

Ammunition: solid shot, high explosive & case

Ammunition stowage (male): 207 6-pdr. 5,700 mg

This tank, carrying the markings of 16th Battalion, was photographed in Germany after the war. No. 9383 was built as a female and may well still be, although the chances are it is a composite, with a male sponson on the other side. Notice that it is fitted with the original 20½-inch (520.7mm) tracks.

Whippet was at least intended to be a cavalry tank. It must be borne in mind that Fuller was busy promoting his own ideas on the future of war, in which much faster tanks played a key role, but at the time he was writing about, August and September 1918, there was still trench fighting to come.

Following upon the evident success of the Amiens offensive, described as a 'black day' even by the German High Command, Allied policy seems to have been to confuse and wear out the enemy by an unremitting series of attacks on different parts of the front, based upon the theory that the Germans could not be strong everywhere at all times. Even so, as we have noted, the attrition rate among the tanks was high although new machines and even fresh battalions were soon to be available. On the British front the biggest obstacle, apart from the decaying and ruinous Somme battlefield of 1916, was the massive defensive system that Haig's troops knew as the Hindenburg Line. It snaked across the British zone, taking in St Quentin, the old Cambrai battlefield of 1917, and Arras, and was considered a formidable obstacle where it entwined, briefly, with the Canal du Nord.

In particular, from late August into early September an attack was launched on a portion of the German front known as the Drocourt-Queant Switch Line. This had featured in the Arras battles of April 1917 but proved to be a tough obstacle and probably a trench line too far. Now, under pressure from tanks of the 3rd Tank Brigade, all either Mark V or V*, this section of the line gave way with surprising ease. Subsequent actions up to the end of September were mostly concerned with clearing the ground to the west of the Hindenburg Line in preparation for a major assault, due to kick off at the end of the month.

It was during this period that a lot of effort went into perfecting techniques of cooperation between tanks and aircraft. The Tank Corps had been allotted its own Army Cooperation Squadron (No. 8 Squadron, Royal Air Force under Major Trafford Leigh-Mallory). It was no easy matter; spotting aircraft from a tank was difficult and if the aircraft was signalling it was nearly impossible to read its message.

By the same token, despite the fact that tanks had their battalion identification numbers painted on the cab roof, it was not always possible to get an accurate reading. Trials were conducted with a camera obscura lens in the roof of a Mark V tank, projecting an image on to a sheet of white paper inside, but this generally seems to have been regarded as more trouble than it was worth, especially in the cramped interior of a tank. In the end, the most

successful arrangement seems to have been in the form of contact patrols, with aircraft dropping messages at headquarters to report progress.

On 27 September a major attack was launched against the Hindenburg Line in the Cambrai area, in what is sometimes called the Second Battle of Cambrai. This battle saw the debut of the 301st Battalion of the United States Tank Corps, which, since it was operating in British tanks, was incorporated into the British Tank Corps and formed part of 4th Tank Brigade. British histories claim that it was equipped exclusively with Mark V* tanks but the battalion's battle narrative tells a different story. It shows both Mark V and V* with a predominance of male tanks and, somewhat surprisingly, a number of so-called composite tanks, which had a male sponson on one side and a female on the other. The document also notes that all Mark V tanks carried cribs; the Mark V*, being longer, was assumed not to need them.

The crib was a replacement for the fascines used at Cambrai in 1917. Being made up from steel and wood, bolted together, it was a lot lighter than a conventional fascine and, in theory at least, capable of being salvaged. There are few accounts of their use, compared with the fascines of 1917, perhaps because the latter were something of a novelty, but it suggests that they served their purpose and did not create any problems. Fourth Battalion, which seems to have been equipped exclusively with Mark V tanks, records that it drew cribs on 21st September while another battalion claims that it selected skilled and experienced crews to man those tanks that carried cribs.

Conditions inside the Mark V tanks were still not much improved. There is an account of a tank with 13th Battalion that returned to the Australian Lines with all the crew, except the officer who was driving, incapacitated by heat and fumes. Since the Australians were desperate for help in dealing with enemy machine guns the tank had to go back into action with the officer driving, one partially recovered crew member and two Australian Lewis gunners to operate the Hotchkiss guns.

In the event the Canal du Nord was overcome without much difficulty although the American battalion lost about one third of its tanks on a forgotten British minefield. Thick mist inhibited progress in the early stages of the battle but, with a few unfortunate exceptions, the results of the day's fighting were deemed to be successful. Even so, the attrition rate had been high; one history records that by 11 October 819 tanks had been turned in for salvage.

Many tanks came back to Bovington, where two Mark Vs are seen giving a demonstration. I.16 still carries the *Qui s'y frotte* badge while the tank behind it carries the letters CS, for Central Schools.

As a result tanks took only a relatively modest part in the final operations of the war. With the Hindenburg Line now essentially broken the fighting entered a new and more mobile phase, which was beyond the powers of the Mark V to sustain. Where the Germans established themselves in fixed defences a few tanks were rallied to attack. Cribs were used again when an attack was launched against German positions behind the Selle river and as the weather turned more autumnal mist often blanketed the battlefield. At times such as this tank crews began to appreciate the advantage of having a compass, which one battalion commander had already commented upon. It also appears to be the case that in open country tanks often went into action without unditching beams, which was regarded as a mistake.

There were instances of fatalities, caused by unditching beams breaking loose, sliding forwards as the tank rolled downhill and crushing anyone protruding from the hatch in the front cab roof – usually the young officer in command. Instructions were issued to prevent this practice, but accidents will happen. Photographs exist of trials, carried out at Dollis Hill in north-west London, with a Mark V* female tank on which sulphonic acid was introduced into the exhaust system to create an effective smoke screen. It is claimed that this was used in action during the Second Battle of Cambrai late in September 1918, although no detailed reports have been found.

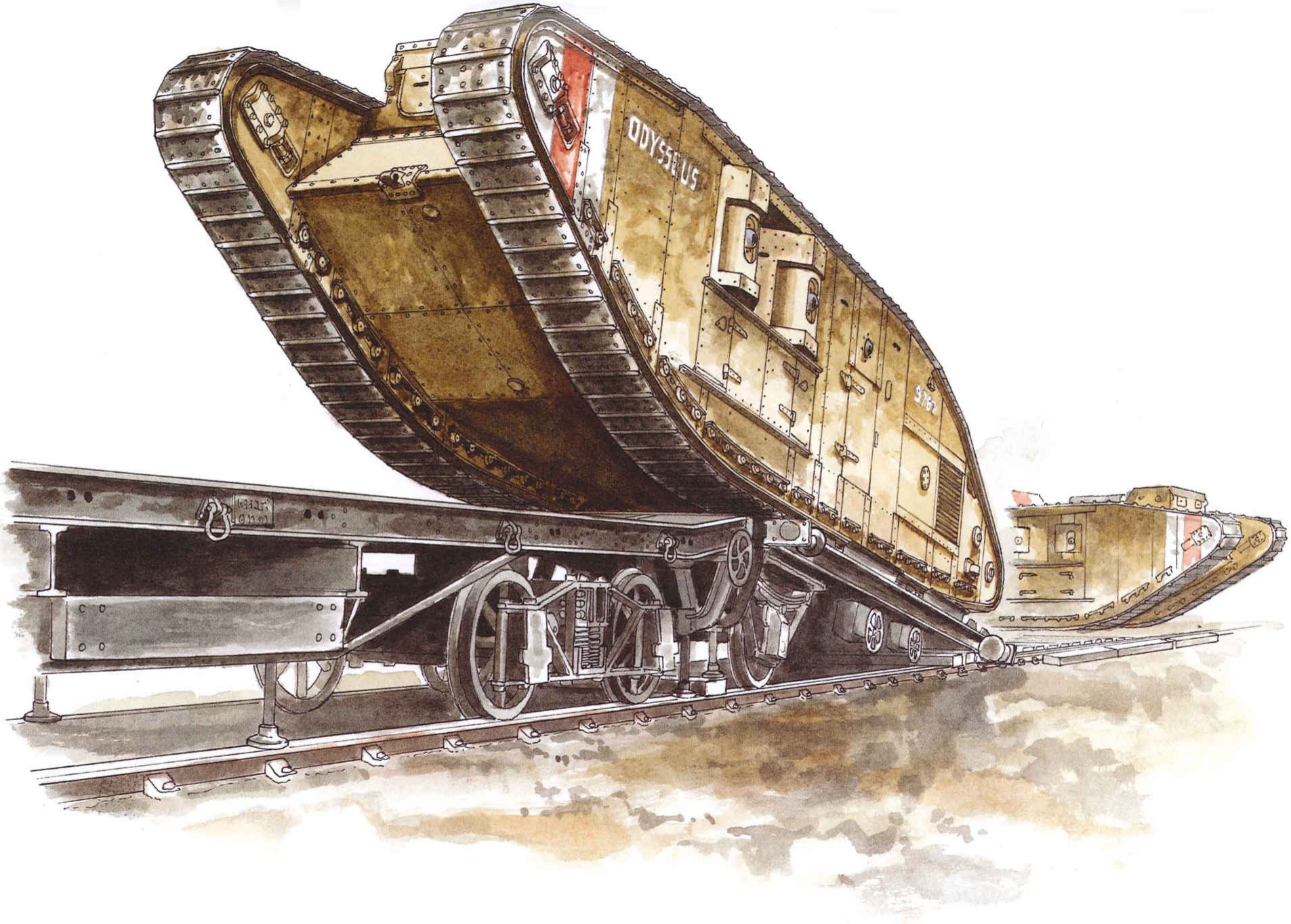
It is fashionable at present to dismiss or play down the value of tanks in World War I but this does not seem to have been the case at the time. In the weeks leading up to the Armistice German troops were often quick to surrender, or abandon their positions, if tanks appeared. British and Commonwealth commanders remarked that infantry who had been into action with tanks were subsequently reluctant to go into action without them and Field Marshal Sir Douglas Haig, in his final despatch of the war said:

> It is no disparagement of the courage of our infantry, or the skill and devotion of our artillery, to say that the achievements of those essential arms would have fallen short of the full measure of success achieved by our armies had it not been for the very gallant and devoted work of the Tank Corps, under the command of Major General H J Elles.

E **MARK V* FEMALE TANK *ODYSSEUS* BOARDING A RECTANK WAGON USING THE SPECIAL RAMP WAGON, FRANCE 1918**

Moving tanks by rail was the only way to cope with the problem during World War I; they were too slow to travel any distance on their tracks and no road transporters existed that could handle the heavy British tanks. Initially, standard British and French railway wagons could just about cope but with the promise of tanks becoming heavier a new, special-purpose wagon had to be designed. The task was entrusted to the Railway Executive Committee, who came up with a massively constructed bogie wagon, complete with supporting jacks, that could handle loads of up to 40 tons. Known as Rectank wagons, these vehicles were issued for use on British and European railways. Under normal circumstances, at railheads, tanks would load from side or end docks or on improvised ramps but in 1918 a special ramp wagon was designed for use in the field. Produced by the Stableford Company, this was a four-wheel wagon with a detachable axle that created a ramp attached to the last wagon of a train. With this device a ramp could be created anywhere in the field where tanks required loading or unloading although preparing it was hard, physical work.

The female Mark V* weighed 33 tons and in order to travel by rail it had to be placed accurately on the Rectank wagon, securely chained down and with its gun sponsons folded in to clear the railway loading gauge. The tank in this case is *Odysseus* of 10th Battalion, Tank Corps.


ODYSSEUS
9762

AFTER THE ARMISTICE

In the final months of the war the French army received 100 Mark V* comprising 87 male and 13 female machines but how much use they got, if any, is not clear. At least one male machine, with its guns removed and the sponson apertures blanked off, was still around in 1940. It was turned into a strongpoint, with dozens of sandbags stacked on top but it was not a mobile one and presumably lasted no time at all when the Germans arrived.

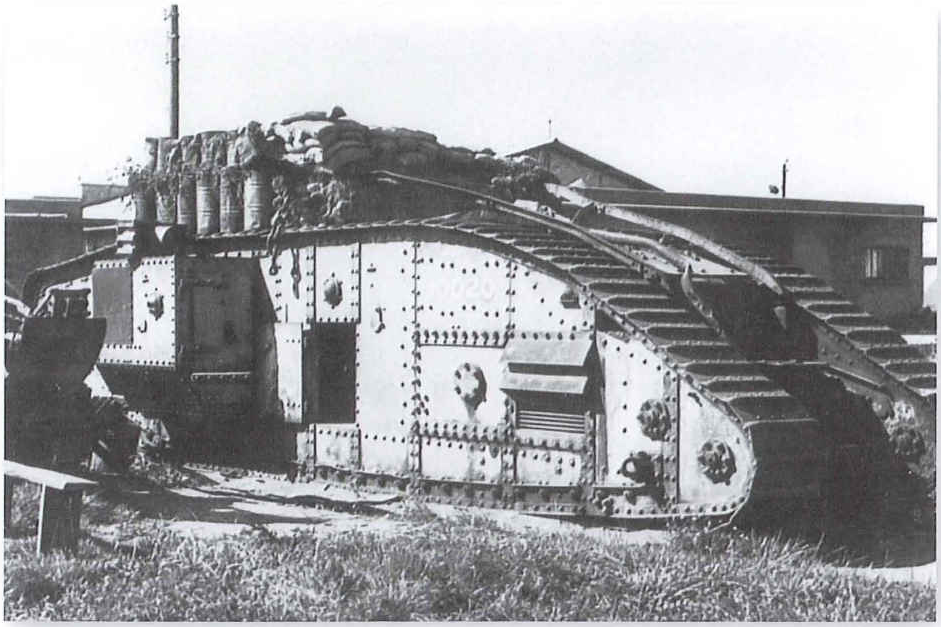
American demands were much more modest; they asked for only five machines – two male and three female – to be shipped across to the USA. The matter was raised and approved early in September 1919 and the correspondence implies that they went soon after. One of them, a male tank and the only example of a Mark V* to survive anywhere, is now in the Patton Museum at Fort Knox, Kentucky, albeit without its guns. A year later a plan seems to have been mooted to sell 27 Mark V* to Spain although there is no evidence to suggest that this was ever done.

The rump of the organization that developed and supplied tanks during the war hung on for some time afterwards, finalizing experiments already being conducted. Most of these involved tanks dealing with mines and wire entanglements but did not necessarily involve Mark V machines. One that did involved attempts to tow drums of fuel by means of a harness, which was hopefully a lot more efficient than it looks. But there is one experiment that, had it worked, might have revolutionized tank development in Britain at a remarkably early date.

It was the result of the ingenuity of two men, both Tank Corps officers whose expertise lay in different but complementary fields. One was Colonel J.F.C. Fuller, reckoned a genius by many of his contemporaries, whose Plan 1919 advocated a swift end to the war with rapidly moving tanks that had not yet been invented. Major Philip Johnson was a Tank Corps engineer, extremely competent and inventive but blessed with a highly imaginative approach to tank technology. He was charged with developing a tank to meet the requirement of Fuller's Plan, although common sense would say that none of this could possibly be ready for 1919.

Following earlier, more pedestrian experiments involving tanks with springs and powerful engines Johnson allowed his imagination to run away with him,

One of the more improbable experiments involving a Mark V was this one where the tank was rigged to haul a train of fuel barrels that clearly had minds of their own.



Surviving Mark V* tanks in French service were turned into infantry strongpoints in 1940. The guns were removed and the tanks themselves immobilized but they were a forlorn hope in the face of the German onslaught.

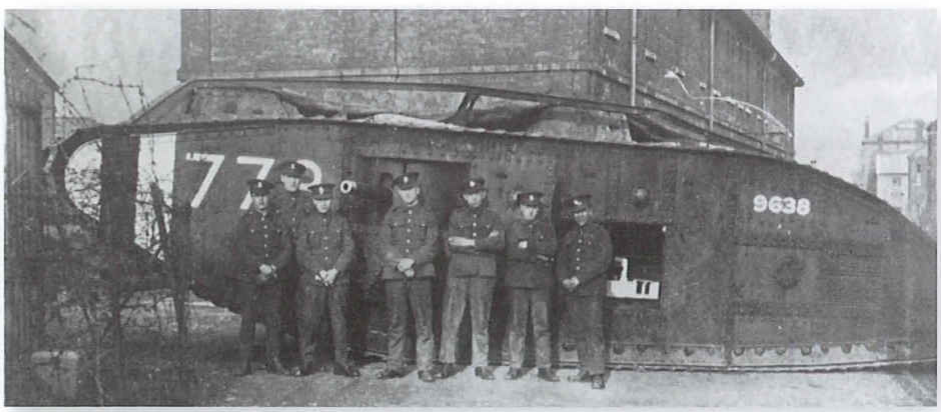
with ideas based upon the flexibility and high-tensile strength of wire rope, as used on heavy-duty ploughing engines of the period. In Johnson's scheme wire rope would not only form the core of laterally flexible track, it also became the main medium of suspension attached to a few springs instead of a multitude. A Mark V female machine No. 9425, shorn of its sponsons and other armoured panels, was fitted with Johnson's track system and a Ricardo 225hp engine. Much of the work was done by John Fowler & Co. of Leeds, experts in the design and construction of steam ploughs and Johnson's pre-war employer. Completed in May 1919 it was demonstrated to an august audience in Roundhay Park, Leeds, where it disgraced itself by showering the audience with detachable track shoes and no doubt by its unkempt appearance. Even so it achieved a top speed of 20 mph, which was not bad for a Mark V. Johnson went on to develop a family of bizarre tanks from this odd prototype while 9425 was retired to the original Tank Museum collection at Bovington, although it was later scrapped.

Citizens of Cologne, more intent on getting out of the rain, ignore a pair of tanks from E Battalion sitting in the middle of the square. But it was a useful reminder of just who was in charge at that time.

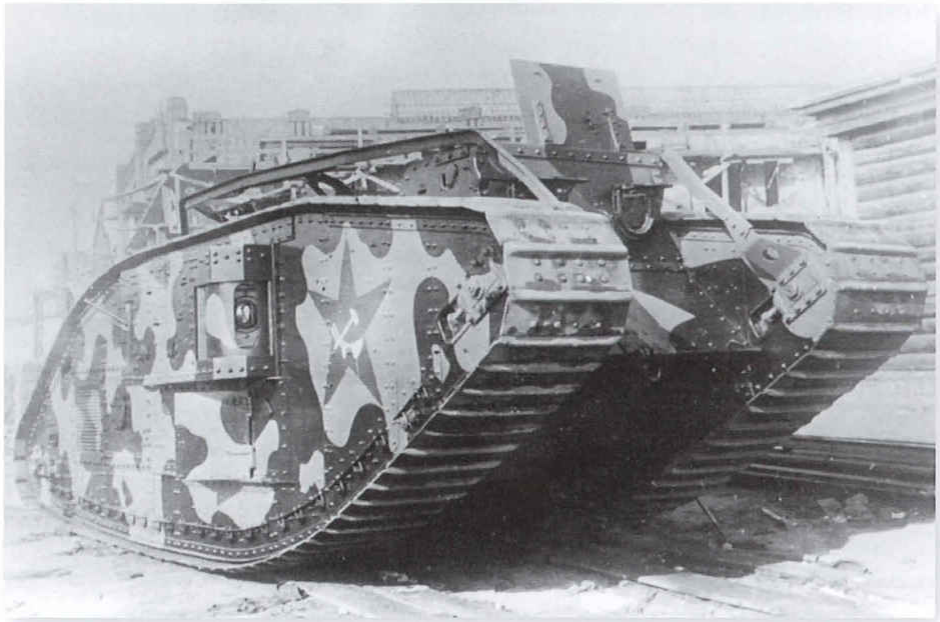
Social unrest following World War I gave rise to a number of major strikes of which the 1920 Coal Strike was one of the first. Tanks, particularly heavy tanks, are not ideal for maintaining law and order – they are too heavy handed – but these Mark Vs of 5th Battalion were photographed in Liverpool on such duty.

With the ending of the fighting in Europe the victorious Allies decided to create enclaves in the western part of Germany in order to enforce the peace and encourage the Germans to agree to unconditional surrender. The British occupied an area around Cologne for which they coined the term British Army of the Rhine. To begin with the Tank Corps element was represented by armoured cars but in March 1919 two brigades, formed from five battalions, were added to GHQ reserve in Germany to be mobilized in case of trouble. A year later demobilization had reduced this strong force to a single battalion (12th), itself much reduced, based at Solingen and called the Rhine Army Tank Company.

As they came home from France the remaining battalions were reduced to cadre strength and ultimately disbanded, although from September 1919 onwards five battalions were recreated, four of which operated Mark V tanks until more modern types came along. Ultimately only 1st (Depot) Battalion at Bovington and the Tank Corps Gunnery School at Lulworth retained any of these tanks and they were mostly used for stunts. Social and industrial unrest in the early twenties called the tanks out for more serious duties; a detachment equipped with Mark V* tanks was sent to Seaforth near Liverpool and at least one Mark V was seen on the streets of Glasgow around the same time.



This photograph, taken in Dublin in November 1920 shows seven men belonging to the Tank Section of 2nd Battalion The Royal Berkshire Regiment. Whether they were the tank's crew or infantry passengers is not clear; the regimental history does not mention tanks at all. However the idea of manoeuvring such a big tank around the streets of Dublin seems daunting.



This tank, photographed outside a military establishment in Moscow in 1921, has been refurbished and repainted for Red Army service. A number of these tanks were still functioning in 1931.

In Ireland some Mark V* tanks were based in Dublin, initially as part of 17th Armoured Car Battalion but there is evidence, of a sort, suggesting that some tanks were operated by infantry battalions. However, work of this kind was better suited to fast and silent armoured cars than clumsy tanks.

Meanwhile back in Germany tank strength was down to a single company, which, when it was not on active service occupied a cavernous Zeppelin hangar at Bickendorf near Cologne. In fact, active service normally involved ceremonial parades or 'hearts and minds' events to win over the local population; although in April 1920 one section of tanks was sent to Brobeck to intimidate a hostile crowd and remained there for two years. The last British tank force in Germany was B Company of what was now 3rd Battalion Royal Tank Corps, which withdrew from Cologne in January 1926.

The adventures of British tanks in Russia during the Civil War period has already been recounted in New Vanguard titles numbers 83 and 95 *Armored Units of the Russian Civil War* (*White* and *Allied*) and (*Red Army*), respectively, by David Bullock and need not be covered here. It is, however, worth mentioning that the first of these, the South Russian Tank Detachment, went direct from Erin, in France and landed at Batun (Batumi) on the Black Sea; it was equipped with Mark V and Medium A tanks, 74 in all. In July 1919 another detachment, bound for Estonia and north-west Russia, was formed at Swanage but had only a handful of tanks, while four Mark V and two Mediums were supplied to the North Russian Tank Detachment that left Wareham in August 1919. They were there to guard the port facilities at Archangel while the role of the other two was ostensibly to train the so-called White Russians on how to operate British tanks. A fruitless task since the rank and file were so petrified of the Bolsheviks that they deserted or defected at the first opportunity.

By the summer of 1920 all the British troops had left and the tanks ultimately fell into Soviet hands. They were known to the Red Army as Rikardos on account of their engines, and records show that in all 59 were acquired and put into service. The last of these were withdrawn as late as 1938, although how the Russians kept them running so long is an impressive mystery. It is claimed that four Mark V tanks in Estonia, still in working order, sallied forth in defence of Tallin in August 1941

THE MARK V**

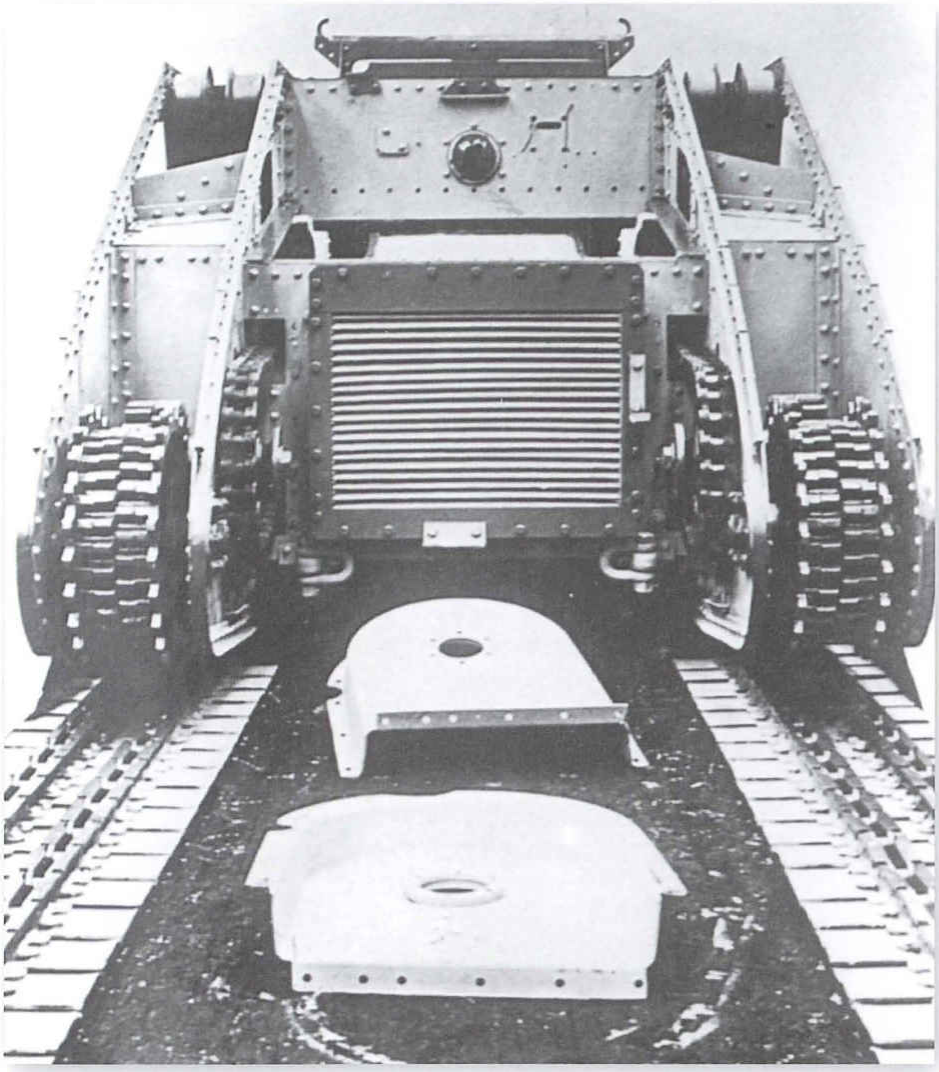
Quantity & Type	Hull numbers
150 male tanks	10501–10650
150 female tanks	10701–10850
600 male tanks	10901–11500

The ambitious programme outlined above for 900 tanks never bore very much fruit. None of these tanks had been delivered at the time of the Armistice and in the end only 25 were completed. However it does raise a number of interesting issues. In the first place it is an indication of the progress that had been made in the tank construction industry that any firm, even a big firm like Metropolitan, could accept orders for so many tanks (in addition to about 400 of other types) at this stage in the war. It suggests a considerable expansion in manufacturing capacity and workforce. It also reveals considerable faith in the future of the tank within the British military establishment, for we must realize that when these massive orders were placed there was a firm belief at all levels that the war could continue into 1919. Then, of course, there was the potentially better International, or Mark VIII design, first mooted in December 1917; another factor was that by the time the first Mark V** was ready the fighting had ended and the requirement for longer tanks to tackle wide trenches was diminished.

The designation Mark V** (or two-star) indicated adaptations to an existing design although in many respects the V** could safely be described as a new tank. The basic shape was revised, making the tank rounder and fuller at the front; the lower profile of the hull frames had been changed to make the long tank easier to steer; and Harry Ricardo had produced a more powerful version of his six-cylinder tank engine, which delivered 225bhp at 1,250rpm. By locating the engine further back inside the tank the centre of gravity was improved and a greater area of free space created at the front. The Mark V** was the same length and width as the Mark V* but a few inches taller because the rear command cab had been moved forward and superimposed on the driving cab. There were also major revisions at the back. The radiator and fan occupied a rear extension of the hull while the fuel tanks were relocated within the track frames, but well away from the crew area. This arrangement improved ventilation throughout the tank but also required that the final drive chains were moved inboard, to the inner faces of the track frames.

Machine-gun positions were installed in the rear of the hull and in both ends of the enlarged commander's cab and in the full-height side doors.

Lined up alongside this muddy Mark V** male are, from the left, Harry Buddicom, W.G. Wilson, Harry Ricardo, Lieutenant Shaw (in naval uniform); the names of the other three, and the dog, are not recorded.

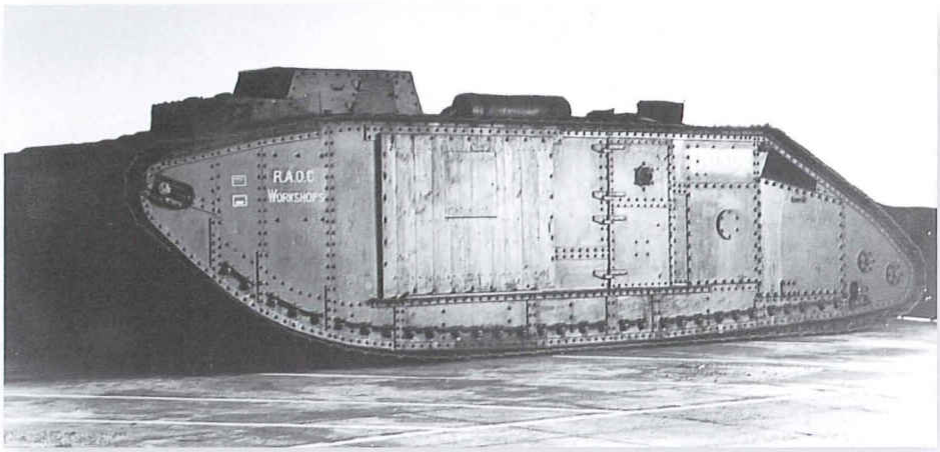


This rear view of a Mark V** shows how the final drive was modified with the chains located on the inner faces of the frames and the gears that meshed with the sprockets.

Otherwise, in terms of armament and sponsons the Mark V** was identical to its predecessors. It is also worth remembering that by this time a lot of investigations were in progress, both in cooperation with friendly aircraft and defence against attacks by enemy planes, which was reflected in the design. For example, there were more roof hatches and at least two of the machine guns had some potential anti-aircraft capability.

At 35 tons the Mark V** was slightly heavier than the V*, which resulted in increased ground pressure, but the new tank was a bit faster than the V* and, since it had a more powerful engine unditching gear was not considered necessary. Some accounts speak of improved internal communications in the form of speaking tubes and wire-operated range and direction indicators for the gunners. This may be so but the fact that most of the crew, apart from the rear machine-gunner when he was in place, were all clustered at the front must have improved the situation anyway.

Doubts about the availability of the Mark VIII, due to the perceived risk to the supply of Liberty engines crossing the Atlantic caused the order for the additional 600 Mark V** to be placed, although of course it was never fulfilled. At the time of the Armistice the Saltley factory found its contracts being cancelled until, in the end, just 20 male and five female machines were completed.



This Mark V**, with sponsons removed, was fitted with Beardmore Type 6/1 four-cylinder diesel engine and sent to the Mechanical Warfare Experimental Establishment in August 1927. No records survive of its performance beyond saying that the engine developed 320hp. It was disposed of in 1933.

As late as 1928 the Royal Army Ordnance Corps released a Mark V** (T10502) for experimental purposes. It was fitted with a Beardmore 400hp diesel engine and tested at the Mechanical Warfare Experimental Establishment in 1929. The engine itself seems to have performed adequately but the starting engine that came with it failed, and while this was being repaired the decompressor, which made the main engine easier to turn over, was modified. All of which, in the long run, seems to have been a complete waste of time; once it was running again the big diesel vibrated so much that it almost shook the tank, and the crew, to bits. Fumes from the fuel also affected the crew so the trials were halted. There is no evidence that they were ever started again.

F

1: MARK V** MALE ENGINEER TANK WITH CANAL LOCK BRIDGE, EXPERIMENTAL BRIDGING ESTABLISHMENT, CHRISTCHURCH 1919

Shortly before the Armistice in 1918 three Tank Bridging Battalions were formed at Christchurch – then in Hampshire, now in Dorset – but soon reduced to an experimental company under command of the then Major G. le Q. Martel, Royal Engineers. Their experimental work involved the design of a portable girder bridge that could be carried and laid by a tank, capable of bridging a standard European canal lock, which was 20 feet (approximately 6 metres) wide.

Much of the design work was carried out by the renowned bridging expert Major C.E. Inglis and the weight of the bridge and its launching apparatus, all concentrated at the nose of the tank, was best balanced by the length and mass of the big Mark V** machines.

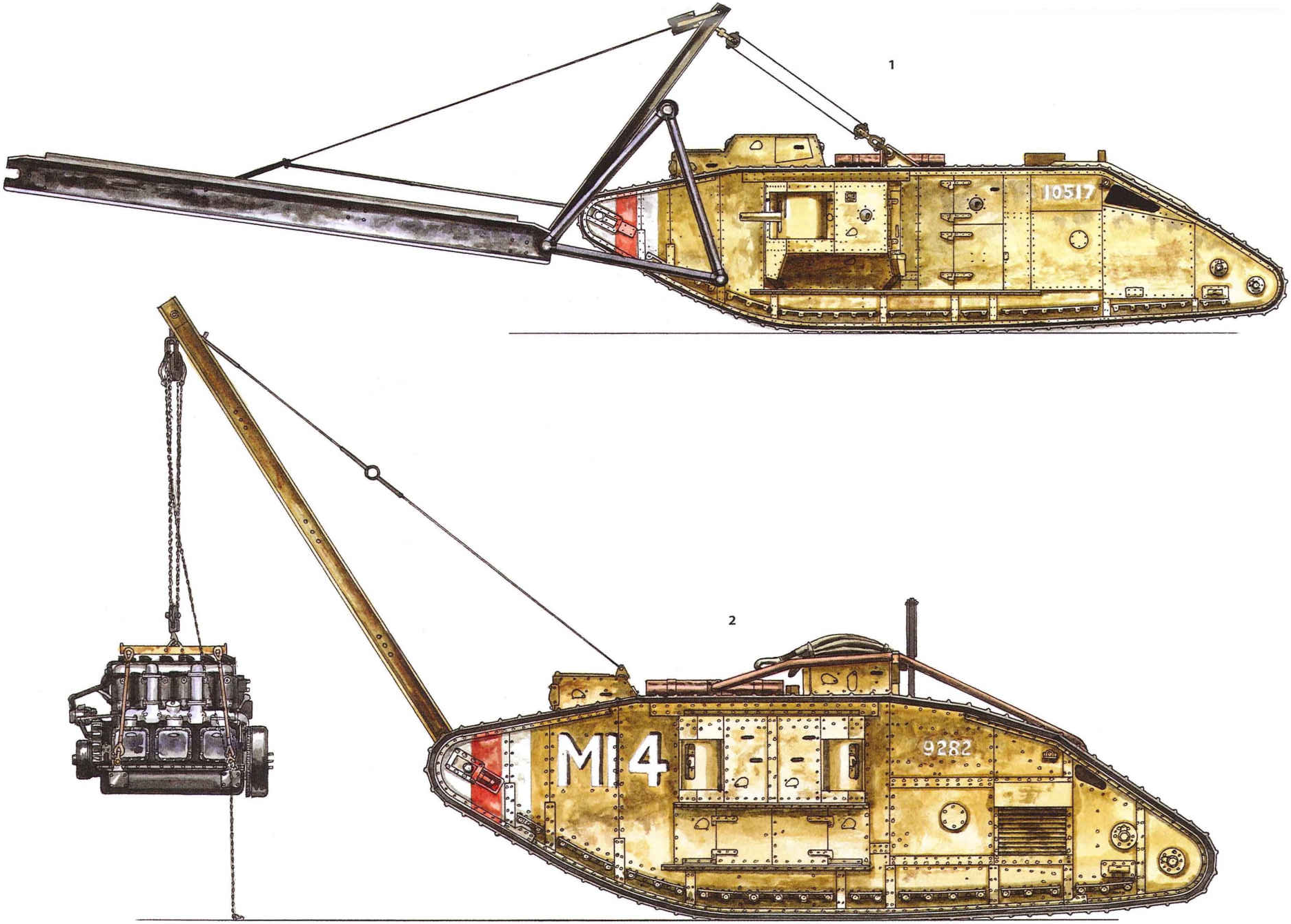
Our illustration shows an interim design that used a manual winch to raise or lower the bridge, and it was this type that took part in the 1920 Royal Tournament display in London. In due course an improved version, using a hydraulic system, was introduced and the range of functions increased, resulting in the multi-role Royal Engineer Tank, a forerunner of the World War II AVRE.

2: MARK V FEMALE TANK WITH PORTABLE TANK CRANE, GERMANY 1919

The Portable Tank Crane was a standard attachment for all tanks Marks IV and V. It was bolted to the idler shafts on the inner face of the horns and stayed, by wire rope and chain, to the top of the driver's cab. It was operated from the ground by a manual chain hoist. Battalions stationed in Germany after the war all had one and it seems to have been almost a permanent attachment on one tank.

Our illustration shows a female Mark V of 13th (M) Battalion in Brigadier General H.K. Wood's 5th Tank Brigade, part of the Army of Occupation in Germany in 1919.

The crane could be used to lift and replace heavy components during tank maintenance in the field and was perfectly capable of lifting a Ricardo 150hp engine out of a tank and carrying it, without upsetting the balance of the tank. However, the process also involved unbolting and removing a large segment of the roof.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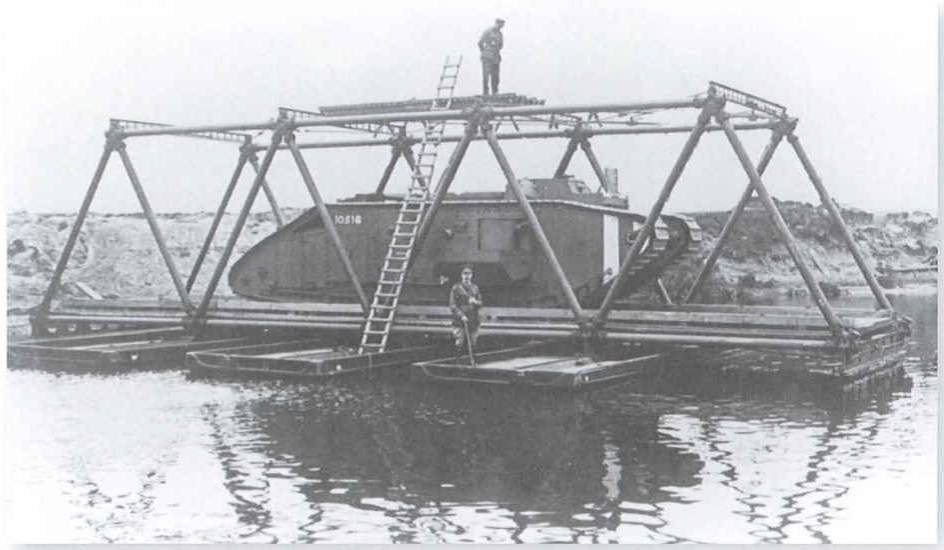
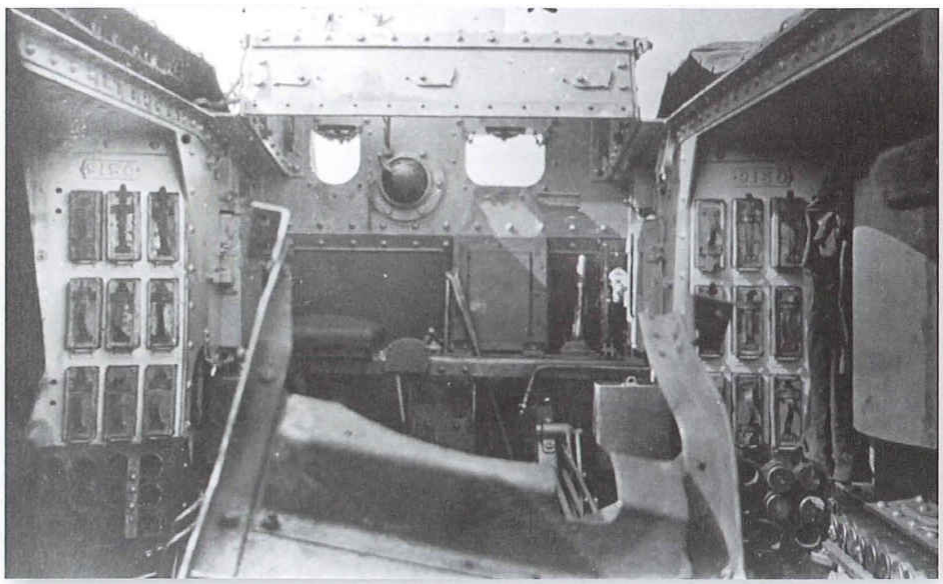


Mark V** tanks were mostly associated with the Royal Engineers at Christchurch after the war. This male tank is being ferried on a raft made from pontoons and a section of Inglis bridge.

DEVELOPMENTS AT CHRISTCHURCH

During the Napoleonic Wars a barracks had been established near Christchurch Harbour, close to the point where the Dorset Stour and Hampshire's River Avon meet. In 1918 this had been taken over by the Royal Engineers, the proximity of the rivers having great significance.

The reason for this may be traced back to 1917 and in particular the Battle of Cambrai. Operations there had shown that while canals could provide secure protection for the flanks of an attacking army they could be a serious obstacle to tanks and, to a lesser degree, other attacking arms. In order to sustain the momentum of an attack it was imperative that obstacles such as canals should not hold up proceedings for a moment longer than necessary, so a bridge was required, which a tank could carry and lay under fire, to enable other tanks to cross. Also, for 1918, a requirement had been foreseen for some sort of lightweight bridge that could be used to enable lighter tanks, such as the Medium A Whippet, to cope with wider trenches that the longer, heavy tanks could take in their stride. These two appear to have had a common origin.



At the end of the war many tanks were scrapped, although it would be unusual to do this with ammunition still in place. This is the interior of male tank 9150 shown with its engine and roof plates removed, providing a fascinating view looking forwards.

The modified Mark V female tank with Johnson's flexible steel-wire rope-suspension system and tracks, photographed upon a sea of mud at Dollis Hill, north-west London, before it was moved down to Bovington and ultimately scrapped.

The towed bridge was a simple affair of two heavy-duty girders, each something over 20 feet long, arranged parallel and spaced at the width of a tank's tracks, braced by lighter cross members. The bridge was towed behind a longer tank (for example, a Mark V*) like a sledge and released when it spanned a wide trench. The towing tank could now go on its way, while following Whippet tanks, driven with care, used the bridge to cross the trench. Since the span of the average lock on the French waterways was also 20 feet, with firm abutments on each side, it was clear that the same type of bridge could be used there too. In most cases the approach to a lock from the side was quite easy so they would make excellent crossing places. But in this instance the idea of towing the bridge was impractical; it would have to be launched from the front of the tank.

Experimental work was undertaken at Tank Corps Central Workshops in France, probably under the direction of Major G. le Q. Martel, the Brigade Major at Tank Corps headquarters but also, of course, an inventive Royal Engineer. There is some evidence that a number of similar experiments were taking place at Dollis Hill in London.

In February 1918 it became clear that the scale of this work was beyond the limited resources of Central Workshops so the engineer-in-chief called in one of the leading bridge designers of the day, Charles Inglis, then serving as Major C.E. Inglis RE. Inglis had already been responsible for the design of a range of prefabricated military bridges, assembled rather like scaffolding, but none so far strong enough to support tanks. He started work on what became known as the 21-foot Canal Lock Bridge but whether this work was carried out in Britain or in France is not clear. Christchurch was taken over in October 1918, when the need for tank bridging was becoming critical

and it became home to three Royal Engineer Tank Bridging Battalions. The plan was to equip each battalion with a dozen of the new Mark II Inglis bridges, which were capable of supporting tanks, and forty-eight tanks equipped to carry and lay the 21-foot Canal Lock Bridge.

Of course it is one thing to make these plans and quite another to have the right equipment available in sufficient quantities to implement it. But in any case much of the urgency went out of the programme when the Armistice came into effect in November 1918. Martel had already been notified that he would be commanding one of the three RE Tank Bridging Battalions but in February 1919 this ambitious project was reduced to an Experimental Bridging Company RE, still with Martel in command but a much reduced staff and equipment.

From surviving photographic evidence it seems that the first tank to be adapted to the role of bridgelayer was Mark V* male tank 10264, which was photographed tackling an artificial lock at Christchurch in what was probably the winter of 1918/19. It has a pivoting, triangular framework at the front, raised and lowered by a block and tackle system and a manually operated winch behind the rear cab. Thus in order to operate this bridge it would require at least two men to leave the tank and work on top, which was hardly satisfactory, but this was probably the first test rig. The same arrangement is shown in a sequence of drawings that appeared in Weekly Tank Notes of 24 May 1919. However by the summer this system had been transferred to a Mark V** tank, which appears to have the winch installed inside the vehicle. This took part in a public demonstration at the event that we now know as the Royal Tournament.

The evidence available, in terms of materials as much as anything else, suggests that up to this point the work was in the hands of Inglis but in due course, as the urgency diminished, it appears that Martel must have taken over. As an officer with considerable experience of tanks Martel seems to have had a poor opinion of the manual method employed to raise or lower the bridge, his argument being that as a machine the tank ought to be able to relieve its crew of any physical work. To this end a Mark V** female machine was equipped with a new kind of lifting apparatus that employed hydraulics instead of the manually operated winch. A Janney hydraulic pump was

G

A MARK V TANK DEMOLISHES A COTTAGE AT BOVINGTON CAMP

In March 1938 an elderly Mark V tank, retained in working order at Bovington Camp, was used to demolish an old cottage by driving through it. The event was staged as a publicity stunt and attracted some national newspapers.

In accordance with ruling practice the tank's number, 9199, was now prefixed by the letter T for tank, and the vehicle also carried a civil registration number, ME9827, applied front and back. ME was a Middlesex registration, which was standard practice for all British military vehicles between the wars. The tank also appears to have been painted green as were most British tanks at this time.

Since it was no longer required as a fighting tank, and in order to reduce the weight and width, the sponsons were removed and the apertures plated over. The tank had also been shorn of its unditching beam rails and carried no weapons at all.

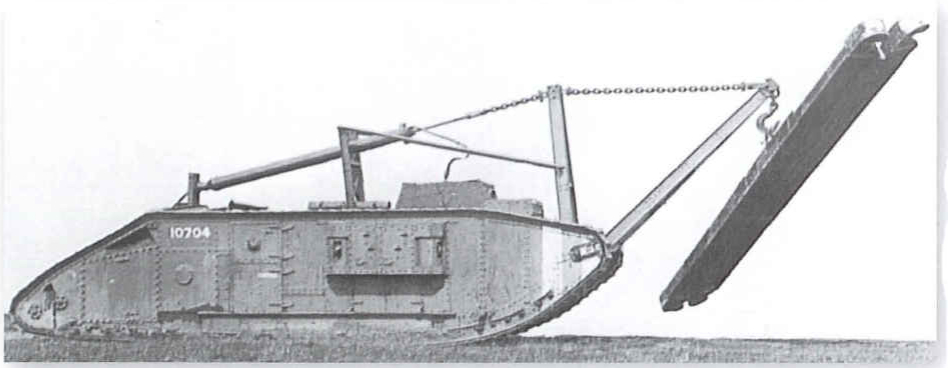
T9199, now fitted with the correct male sponsons and unditching gear, was added to the Tank Museum collection in 1949, where subsequent research revealed that it had gone into action with 8th Battalion at Amiens on 8 August 1918 under the command of Temporary Second Lieutenant Harold Whittenbury, who was awarded a Military Cross for his actions on that day. The tank has since been restored to its wartime appearance.

An incident from the 1925 Wool Trials; a Burford Cletrac tractor has drowned and is being rescued by a Mark V acting as a recovery vehicle. It is fitted with a portable tank crane at the front.

installed, driven off the tank's engine. This, via a massive hydraulic cylinder and two sturdy jibs, could handle the bridge without anyone having to leave the relative safety of the tank. Of course, there was a lot of prominent and vulnerable top hamper on the roof of the tank but no doubt further designs could have modified this. In the event this is as far as this work went, although it had expanded in other respects.

The Mark V** with the hydraulic jib was known as the RE or Royal Engineers Tank and, like any good sapper, it could turn its hand to other work. Used as a field crane the tank could lift payloads of up to 15 tons, to sweep mines by trailing a pair of heavy rollers from the jib or placing and detonating an explosive charge at the end of a long jib for demolition tasks. With this versatility it was a forerunner of the Armoured Vehicle Royal Engineers (or AVRE) of World War II and after.

The other bridge mentioned above, the Inglis Rectangular Bridge Mark II, was not carried or laid by a tank, except in one exceptional instance, but it was



The final variant of the RE Tank is illustrated by this Mark V** female (now in the Tank Museum collection), which used a hydraulic pump to activate the lifting arms for a variety of functions including the crane shown here.

Dee of 4th Battalion crashed off Wool Bridge en route from Bovington to Lulworth in 1924. An ancient notice attached to the bridge warns anyone who damages it that they are likely to be transported to the Colonies for life!

capable of supporting a heavy tank over an obstacle. With a length of 105 feet it could be used by a 35-ton tank to pass across a 100-foot gap. Sections could be linked together to bridge wider gaps, up to 450 feet, but only at water level because the central sections had to be supported on floating pontoons. For wider water obstacles (and the British Army had the River Rhine in mind at this time) sections of bridge, resting on pontoons, could be created to carry tanks as a sort of ferry. This was a concept that was resurrected when the Rhine actually had to be tackled in March 1945.

The exception mentioned above was the Inglis Assault Bridge, a 135-foot Inglis Mark II supported on a set of dumb tracks not unlike the track frames of a Whippet tank. This structure would be assembled as near to the crossing point as possible and then pushed into place by a tank. The special RE Tank is normally associated with this work although there seems to be no reason why any tank could not have moved it if required. The bridge would be pushed across the gap until it reached the far side, by which time the tracked carriage would be on the point of dangling in the gap. Once it was finally in place the tank would detach itself and cross over. Again, this impressive arrangement reappeared, in improved form, in World War II.

Other experiments carried out by Martel's sappers at Christchurch included one connected with a Mark V type. This involved the tank towing a heavy-duty Fowler balance plough – a huge, double-ended thing normally hauled to and fro by a pair of steam ploughing engines. This cut a deep, albeit straight trench that could then be improved upon by the infantry. A smaller device known as a Mole Plough, normally used to create drainage tunnels, could also be used to lay signal cables underground.

It is always the way in war; just as the level of inventiveness reaches its peak the requirement fades and interest diminishes.

Between February and May 1919 Central Workshops refurbished up to 90 Mark V tanks, including conversion to composite, or hermaphrodite, type, but whether for Russia or Germany is unclear. The artwork on this tank was the work of Lance Corporal Planck, a cartoonist on the magazine Punch in civilian life.

THE MARK X

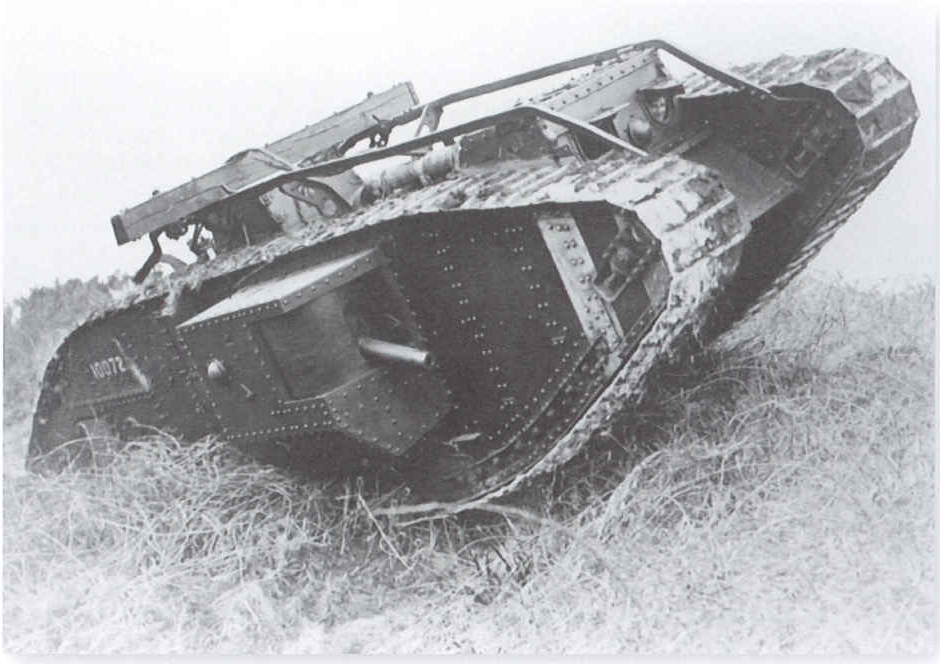
Events moved fast in the last months of the war. Soon the troops and tanks had advanced beyond the wide and complex trenches of the Hindenburg Line into open and relatively unspoiled country. As a result things changed. There was no further need for longer tanks like the Mark V* or even its proposed successor the Mark V**. Now there was considerable demand for more of the faster, manoeuvrable Mark V machines and in August 1918 a new order for 2,000 was placed with Metropolitan, apparently on the condition that the firm would not be expected to undertake too many modifications or improvements. That was a forlorn hope; Wilson, as we have seen, was already making changes to the ventilation system in order to improve conditions for the crew and it had also been agreed that a number of the loopholes and pistol ports would be eliminated. But Central Workshops ultimately came up with a list of 62 other modifications, small things in themselves but the cumulative effect was to cause Metropolitan to reject the work.

It was Stern, in the end, who managed to get the programme back on track by persuading Metropolitan to change their mind, but in order to justify this it was agreed to treat it as a new tank. Under the existing system it should have been classified as Mark V*** but this was seen as a clumsy arrangement likely to cause confusion so the designation Mark X was adopted instead. Outwardly it would look like the original Mark V and be powered by the same engine but, since none were built and no drawings appear to have survived, it is impossible to say exactly what it might have looked like.

CONCLUSION

The life of the average tank in 1918, like that of the butterfly, was ephemeral. A moment or two of glory on the battlefield, a year or two on dull garrison duty and ultimately the scrapheap.

In 1928 King Amanullah, the Amir of Afghanistan, visited Britain and among other locations was brought down to Bovington and Lulworth. At the



The Amir Amanullah of Afghanistan visited Bovington and Lulworth in March 1928 and was treated to a display by a couple of Mark V* tanks. It was a surprising choice and surprising to find them still in good condition ten years after the war ended. Did they hope to sell some?

latter site he and his entourage were treated to a demonstration by two Mark V* male tanks but whether this was just a show to keep him amused, or a scheme to supply some to his country, is by no means clear. It is surprising enough to find any of these tanks still in operational order ten years after the Armistice but the idea that they might have been suitable for service in a country like Afghanistan is laughable.

However at least one anonymous Mark V seems to have proved to be a survivor. Damaged in action on a battlefield in France in 1918 it was subsequently removed to Tank Corps Central Workshops for repair. When it emerged in 1919, as good as new, it had been transformed into a composite, or hermaphrodite tank with a male sponson on one side matched by a female sponson on the other.

In this form it accompanied the British South Russian Tank detachment to the Black Sea and was used to train the so-called 'White' Russian army in its struggle against the Bolsheviks. This failed, the British troops withdrew and the surviving tanks were absorbed into the Red Army which they served for many years between the wars before being retired.

Our tank was one of two presented to the city of Smolensk shortly before World War II and parked outside a public building like venerable sentinels. Smolensk was occupied by the Germans who in due course removed one of these tanks back to Berlin where it was photographed in 1945; probably the only Mark V ever to fall into German hands. Even so by that time Berlin had fallen to the Russians who, whether they knew it or not, recaptured one of their own. What became of it after that is uncertain but it was a long and adventurous life for one Great War veteran.

The reference on page 35 to Mark V tanks at Tallin in Estonia in World War II appears to be confirmed by photographs recently seen on the Internet. These show hermaphrodite or composite Mark V tanks apparently armed with Soviet 45mm tank guns in their male sponsons and water-cooled Maxim machine-guns on the female side. They are reputedly ex-Estonian tanks, left behind by the British and subsequently taken over by the Russians who rearmed them for further action.

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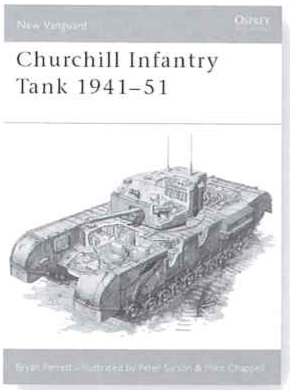

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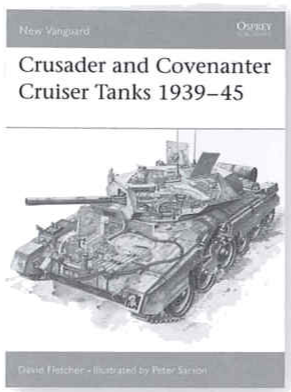

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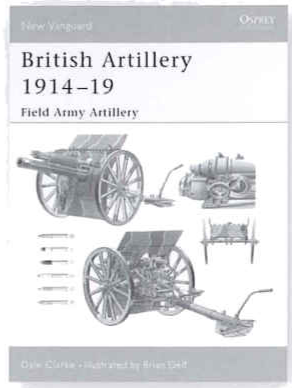

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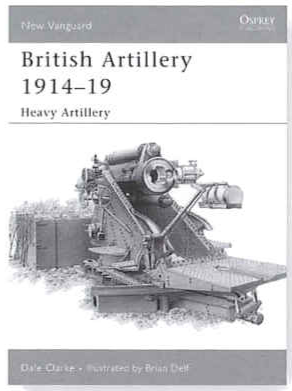

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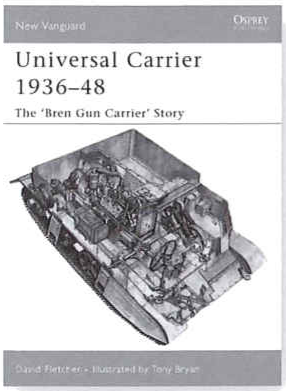

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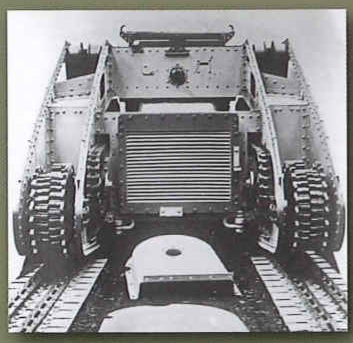

MARK V TANK

Although, to the casual eye, all British tanks of World War I look much the same, the Mark V is quite outstanding and has a strong claim to be the tank that won the Great War. In this title, renowned tank expert David Fletcher examines the technological developments that made this tank excel where others had failed, how it gave the British the upper hand over the Germans on the battlefield, and why it was adopted by the US Tank Corps. Accompanied by detailed artwork showing the design changes that allowed the Mark V to breach the widest German trenches, this title is an excellent resource for the study of the armour of World War I.

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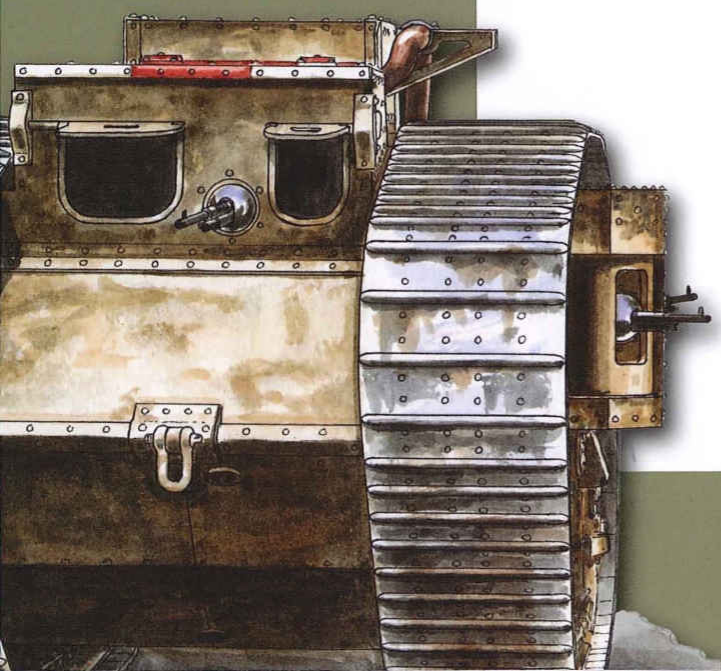

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